Imperial Institute
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Agricultural Research, Pusa.

# PROCEEDINGS

OF THE

# ZOOLOGICAL SOCIETY

# OF LONDON.

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## PART XIX.

1851.

PRINTED FOR THE SOCIETY;
SOLD AT THEIR HOUSE IN HANOVER SQUARE,
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# PROCEEDINGS

OF THE

# ZOOLOGICAL SOCIETY OF LONDON.

January 14, 1851.

Prof. Owen, F.R.S., Vice President, in the Chair.

The following papers were read:—

## 1. On a new and most remarkable form in Ornithology. By John Gould, F.R.S. etc.

(Aves, Pl. XXXV.)

I have the pleasure of introducing to the notice of the Society on the present occasion the most extraordinary bird I have seen for many years, and which forms part of a collection made on the banks of the upper part of the White Nile, by Mansfield Parkyns, Esq., of Nottingham. For this bird I propose the generic name of Balæniceps, with the following characters:—

Bill enormously robust, equal in breadth and depth; sides of the upper mandible much swollen; culmen slightly elevated, depressed in the middle of its length, and terminating at the point in a very powerful hook; tomiæ sharp, turning inwards and very convex; lower mandible very powerful, with a sharp concave cutting edge and a truncated tip; nostrils scarcely perceptible, and placed in a narrow slit at the base of the bill, close to the culmen; orbits denuded; head very large; occiput slightly crested; wings very powerful, the third, fourth and fifth feathers the longest; tail of moderate length and square in form; plumage soft and yielding; skin of the throat loose, and capable of dilatation into an extensive pouch; tibiæ and tarsi lengthened, the latter a fourth shorter than the former; the lower third of the tibiæ denuded; toes four in number, all extremely long, and without the slightest vestige of interdigital membrane; hind-toe on the same plane as the anterior ones and directed inwards; tibiæ and tarsi reticulated, the reticulations becoming much smaller on the joints; upper surface of the toes scutellated; nails powerful, and not much curved; the nail of the centre toe impectinated.

**Balæniceps Rex.**

Bill pale yellow, becoming horn-colour on the culmen and tip, and blotched with dark brown; orbits pale yellow; head and neck slaty grey, darkest on the crown; chest ornamented with lanceolate feathers of a similar colour, with a dark stripe down the centre; abdomen, flanks, thighs and under tail-coverts very pale grey; upper surface generally very dark grey, most of the feathers margined with light grey; primaries, secondaries and tail blackish grey; rump and upper tail-coverts light grey; legs greyish black.

Total length, from the tip of the bill to the extremity of the tail, 52 inches; from the tip of the bill to the end of the centre toe, 67; bill, from the gape to the tip, 9; depth of the bill, $4\frac{3}{4}$; breadth, 4; wing, 27; tail, 12; tibiæ, 13; tarsi, 10; middle toe and nail, 7; external toe and nail, $6\frac{1}{2}$; internal toe and nail, $5\frac{1}{4}$; hind toe and nail, 4.

*Hab.* The upper part of the White Nile, in Eastern Africa.

*Remark.*—This is evidently the Grallatorial type of the *Pelecanidæ*; at least such is the conclusion to which I am directed after a careful examination and comparison of it with *Pelecanus*, *Grus*, *Ardea*, and *Cancroma*, to none of which genera is it so nearly allied, except in general contour, as to *Pelecanus*. Perhaps the most singular feature connected with this form is the entire absence of interdigital membrane, a character so conspicuous in the Storks, Herons, and the Boat-bill, which latter bird is as nearly allied to *Nycticorax* as the present bird is to *Pelecanus*. Both *Cancroma* and *Nycticorax* have the nail of the centre toe strongly pectinated, which character is not found in *Pelecanus* nor in *Balæniceps*.

## 2. Descriptions of Twenty Species of Columbellæ, and one species of Cypræa. By J. S. Gaskoin.

1. **Columbella tenuis.** *Testa pyramidalis, subventricosa, lævis, tenuis, albicans, maculis irregularibus fuscis magnis longitudinaliter dispositis; anfractibus octo, duobus anticis gibbosis; spirâ subelongatâ, acuminatâ; aperturâ latâ, anticè divergente, posticè acuminatâ, labio externo tenui, internoque edentulo, varice externo subelevato; striis tenuibus ab varice anticè continuis; canali brevi.*

Shell pyramidal, rather ventricose, smooth, thin, of a dull whitish colour, with large distant dark brown markings extending, irregularly, in width and form longitudinally over the volutions, which are eight in number, the two anterior being gibbous, the others proceed to form an acuminated apex; the spire constitutes more than one-half the length of the shell*; aperture wide, diverging anteriorly, acuminated posteriorly; outer lip curved outwards, thin, without denticulations, as is also the inner lip, which is shining, and within of the same colour as the shell; a slightly elevated varix terminates the inner edge of the aperture, from which fine striæ pass obliquely forward over the dorsum to the anterior portion of the outer lip; channel short, slightly curved.

---

* In estimating the proportionate length of the spire of the shell, I take the measurement from the termination of the last volution at its junction to form the posterior point of the aperture; and the width, at the largest diameter of the anterior whorl.

Length, $\frac{60}{100}$ of an inch; width, $\frac{27}{100}$ of an inch.
*Hab.* ——? Cab. Gaskoin, specimen unicum.

2. **Columbella albinodulosa.** *Testa oblongo-ovata, pallidissimè luteo-fulva, fasciis angustis interruptis tribus brunneis; spirâ acuminatâ, anfractibus septem; nodulis latis prominentibus subdistantibus albi-coronatis; aperturâ oblongâ subquadratâ albâ; labio externo crasso, recto, submarginato, intus denticulato; dentibus posticis majoribus, labio interno dentibus irregularibus subvaricosis; canali recto latiusculo subelongato.*

Shell oblong-ovate, of a very light yellowish brown colour, with three interrupted or dotted dark brown narrow bands, the first extending from the anterior point of the outer lip to the centre of the aperture, the second from the anterior third of the margin of the outer lip to the posterior part of the aperture, and the third from the posterior third of the margin of the outer lip along the anterior portion of the volutions spirally to the apex; broad nodules or tubercles, moderately prominent and rather distant, exist from the posterior portion of the outer lip over the dorsum or shoulder, and continuously on the centres of the whorls, and as the whorls become narrow, occupy them longitudinally on to the point of the spire, each nodule being crowned with an opake white blotch; opake white irregular markings are also on the anterior volution; spire acuminated, constituting rather less than one half the length of the shell; seven volutions, rather convex; aperture straight, rather wide; outer lip sharp at its edge, straight, curving suddenly on forming the channel; just within the lip is a row of about eight rather prominent teeth, the posterior being the larger; inner lip slightly denticulated with about six irregular varices, with a slight sharp prominence at its margin, the large whorl ribbed with fine striæ, most prominent anteriorly; channel straight, rather wide, slightly elongated and recurved.

Length, $\frac{45}{100}$ of an inch; width, $\frac{20}{100}$ of an inch.
*Hab.* ——? Cab. Gaskoin.

3. **Columbella interrupta.** *Testa oblongo-ovata, albicans, fasciis duabus interruptis latis rufescenti-brunneis; fasciâ anticâ pallidiore; spirâ acuminatâ, anfractibus septem vel octo; aperturâ latiusculâ præcipuè ad partem posticam; labio externo crasso margine acuto, intus denticulato, denticulis quatuor vel quinque; labio interno cum margine externo denticulato, aurantiaco; testâ extus cancellatâ striis spiralibus validis, longitudinalibus tenuibus; peritremate pallide aurantiaco, posticè subobtuso angulari; canali breviusculo latiusculo.*

Shell oblong-ovate, of a dull greyish white colour, with two distinct, strongly marked, interrupted, broad, dark reddish brown bands, the anterior being the less deeply coloured, the markings being rather crescentic, with the horns pointing towards the aperture becoming more arrow-shaped advancing onwards; the anterior band extends from the fore part of the outer lip to the middle of the inner side of the aperture, the second from the posterior part of the edge of the outer lip over the dorsum at the shoulder, and spirally on the centres of the volutions to the apex; at the superior portion on the aperture side of each marking is an opake white colouring; spire acuminated, seven to eight whorls; at the suture, spirally on to the apex, is a fine whitish varix having interrupted brown markings along its entire course; aperture rather straight and broad, widening posteriorly; outer lip thick, sharp at its edge, orange-coloured at its inner border, where there are four or five slight denticulations; inner lip has a finely denticulated ridge at its outer edge of an orange colour, within it is an angular projection forming the commencement of the channel; the whole external shell is cancellated, the transverse striæ being much stronger than the longitudinal, and especially anteriorly; peritreme of a light orange colour, rather obtusely angular posteriorly; channel rather short and moderately wide.

Length $\frac{40}{100}$ of an inch; width, $\frac{21}{100}$ of an inch.
*Hab.* ——? Cab. Gaskoin.

4. COLUMBELLA LEUCOSTOMA. *Testa ovata, albicans, nitens, posticè fasciâ latâ brunneâ spirali ornata; apice albicante dimidio antico anfractûs ultimi albido; spirâ acuminatâ, anfractibus septem; aperturâ gulâque albis latiusculis, illâ posticè subquadratâ, labio externo intus subdenticulato, dentibus sex posticis majoribus; canali brevi latiusculo.*

Shell ovate, shining, of a whitish colour, having a broad brown band occupying the posterior half of the anterior volution and the entire of the sixth, fifth and fourth, except at their posterior edge, which is white, the brown band terminating in an undefined line near the suture; the three apicine whorls are white, with very fine lightly coloured linear markings, and in like manner is the white anterior half of the last whorl finely but irregularly streaked; spire acuminated, seven volutions, which constitute the greater half of the length of the shell; aperture white, as is also the interior, rather broad, somewhat square posteriorly; outer lip gradually curved inwards, having within it about six slight denticulations, the posterior being the larger; inner lip smooth, spiral; a few fine striæ extend obliquely forwards over the dorsum of the channel from the slight varix at its outer edge; channel short, rather broad.

Length, $\frac{35}{100}$ of an inch; width, $\frac{17}{100}$ of an inch.
*Hab.* ——? Cab. Gaskoin.

5. COLUMBELLA PACIFICA. *Testa oblongo-ovata, lacteo-opaca, maculis irregularibus distantibus rufescenti-brunneis ornata; intus alba; spirâ acuminatâ, anfractibus convexis septem vel octo posticè obtusissimè coronatis; aperturâ latâ rectiusculâ;*

*labii externi margine tenui intus edentulo; labio interno lævi externè margine tenui; anfractu ultimo anticè valde striato, striis tenuioribus longitudinaliter decussantibus; canali brevi, lato, subrecurvo.*

Shell oblong-ovate, of an opake milk-white colour, distantly maculated with dark reddish brown irregular markings, internally white; spire acuminated, constituting the greater half of the length of the shell; volutions seven to eight, convex, their posterior margin generally very obtusely and distantly coronated; aperture wide, rather straight; outer lip thin at the edge, even, no denticulation within, marginated; inner lip even, having a very slight straight edge or varix externally, from which rather strong striations pass over the anterior of the dorsum to the outer lip, and very much finer striæ longitudinally pervade the same; channel short and wide, very slightly curved.

This shell differs from *Columbella Miser*, Sowerby, in the absence of denticulation, in the last volution being much more gibbous, the aperture much wider, the channel decided, the spire more pyramidal, and much less coloration and markings.

Length, $\frac{45}{100}$ of an inch; width, $\frac{25}{100}$ of an inch.

*Hab.* Sandwich Islands. Cab. Gaskoin.

6. Columbella varicosa. *Testa oblongo-ovata, nitens, crassa, albicans, colore nigricanti-brunneo irregulariter induta; marginibus posticis anfractuum albicantibus; spirâ acuminatâ, anfractibus septem vel octo subventricosis varicosis validis prominentibus subobliquis instructis; parte anticâ ultimi anfractûs lævigatâ, anticè supra canalem transversè striatâ; aperturâ oblongâ subquadratâ rectâ intus cærulescente, labio externo recto, marginato posticè incisurâ magnâ instructo, intus denticulato denticulis posticis validiusculis, labio interno lævi margine elevato tenui; canali brevi latiusculo.*

Shell oblong-ovate, shining, thick, strong, of a white colour, generally irregularly and greatly covered, more or less intensely, with an almost black-brown coloration, excepting the posterior edges of the whorls, where it remains nearly white; spire acuminated, constituting one half the length of the shell, has seven to eight volutions, rather convex, slightly diagonal; strong, prominent, somewhat distant varices exist on the posterior margin of the last whorl, the anterior portion of which have many striæ passing transversely and obliquely forwards from the columellar edge of the aperture; aperture oblong, rather square and straight, internally of a bluish white colour; outer lip straight, marginated, having a rather large notch at the junction with the body of the shell, and having anteriorly to this notch, within, about five or six slight denticulations, the posterior being the larger; inner lip smooth, without denticulation, edge slightly elevated and thin; channel short, rather broad.

Length, $\frac{80}{100}$ of an inch; width, $\frac{35}{100}$ of an inch.

*Hab.* Peyta, Peru. Cab. Cuming, Gaskoin.

7. Columbella Australis. *Testa oblongo-ovata, albicans,*

*maculis parvis irregularibus brunneis inæqualibus ornata, majoribus saturatioribusque apud marginem posticum anfractuum positis; spirâ acuminatâ, anfractibus octo subgibbosis, apice albicante; aperturâ latiusculâ intus cærulescente, labio externo recurvo ad canalem convergente, intus denticulis septem ad octo subprominentibus subdistantibus, labio interno lævi anticè angulifero; canali latiusculo brevi recurvo, anfractu ultimo anticè transversim striato; peritremate posticè angulari.*

Shell oblong-ovate, of a whitish colour, greatly covered with small, irregular, dark brown, conjoined specklings, of unequal intensity in coloration, the larger and darker markings being at the edges of the whorls; three rather narrow interrupted bands traverse the last whorl, the posterior one proceeding along the anterior margin of the volutions; spire acuminated, being rather the greater half-length of the shell; volutions eight, slightly gibbous, the four apicine white; aperture rather broad, internally of a bright pinkish blue-white colour, slightly iridescent; outer lip a little curved, converging at the channel; within are seven or eight irregular, slight elevations or denticulations, rather distant, at the anterior portion of the edge are several fine denticulations; inner lip smooth, with a very slight thin varix at the anterior part; an obtuse angularity forms the commencement of the channel; channel rather wide, short, and a series of rather fine parallel striæ traverse the anterior part of the last whorl; peritreme angular posteriorly.

Length, $\frac{80}{100}$ of an inch; width, $\frac{25}{100}$ of an inch.

*Hab.* Sydney. Cab. Gaskoin, Cuming.

8. COLUMBELLA CANCELLATA. *Testa ovata, pallidè aurantiaco-brunnea; apice roseo, superficie omnino cancellatâ, serie posticâ granulorum majore; spirâ acuminatâ anfractibus septem; aperturâ latiusculâ brevique, labio externo subrecurvo convergente, intus denticulis quatuor vel quinque subprominentibus, labio interno lævi; canali latiusculo, brevi, peritremate posticè obtusè angulari.*

Shell ovate, of an uniform light orange-brown colour, except the apex, which is pink, deeply cancellated over its entire surface, having the posterior line of nodules larger than the others; spire acuminated, and forms rather more than half the length of the shell; volutions seven; aperture rather broad and short; outer lip slightly curved, converging towards the channel; within it are four or five rather prominent denticulations; inner lip smooth, very obtusely nodulated at its exterior slightly elevated edge; channel moderately broad, short, curved towards the columella; peritreme obtusely angular posteriorly.

Length, $\frac{35}{100}$ of an inch; width, $\frac{18}{100}$ of an inch.

*Hab.* West Indies. Cab. Gaskoin.

9. COLUMBELLA PULLA. *Testa oblongo-ovata, saturate brunnea; parte anticâ ultimi anfractûs, columellâque albicantibus; spirâ acuminatâ, anfractibus octo vel novem, convexiusculis,*

*suturâ lævi; aperturâ latiusculâ posticè acuminatâ, labio externo tenui lævi, intus subdenticulato, saturate brunneo, labio interno lævigatè subdenticulato, anticè subalbido, margine interno varicem rectum efformante, parte anticâ testæ transversim striatâ; canali mediocri, recto.*

Shell oblong-ovate, of an uniform dull, very dark brown colour, and also within, excepting the columella and edge of the outer lip, which are white; spire acuminated; volutions eight or nine, slightly convex, even at the suture; aperture rather acuminated posteriorly; outer lip thin, smooth, internally slightly denticulated; inner lip shining, with slightly elevated nodules or teeth, and its edge forms a fine straight varix, from which a few thin striæ pass over the dorsum of the channel; channel moderately wide and straight.

Length, $\frac{52}{100}$ of an inch; width, $\frac{20}{100}$ of an inch; length of spire, $\frac{30}{100}$ of an inch; length of last whorl, $\frac{22}{100}$ of an inch.

*Hab.* ——? Cab. Gaskoin.

10. Columbella intexta. *Testa oblonga, angusta, lævis, albicans, strigis punctulisque irregularibus saturate brunneis ornata; spirâ acuminatâ, anfractibus novem vel decem; marginibus posticis anfractuum brunneo maculatis, ultimo anfractu anticè similariter colorato; suturâ elevatâ; aperturâ breviusculâ angustâque, labio externo arcuato, ad marginem acutiusculo, extus crassiusculo, ad canalem convergente, labio interno ad marginem subvaricoso, lævi, edentulo; canali breviusculo, angustato, extus transversim striato.*

Shell elongated, narrow, smooth, of a dull whitish colour, having dark brown irregular dottings and streaks pervading the entire surface of the shell; irregular, rather large and distant, similarly coloured spots are on the posterior margin of the volutions to the apex, and a band, similarly indicated at the anterior part of the last whorl; spire acuminated, constituting about two-thirds of the length of the shell; volutions nine to ten, suture elevated; aperture rather short and narrow; outer lip arched, sharp at its edge, thickened externally, converging towards the channel; inner lip slightly ridged at its edge, smooth, without denticulations; channel rather short, somewhat narrow, externally transversely striated.

Length, $\frac{55}{100}$ of an inch; width, $\frac{20}{100}$ of an inch.

*Hab.* Australia. Cab. Cuming, Gaskoin.

11. Columbella contaminata. *Testa oblonga, lævis, saturate brunnea, intus subalbida, lineâ suturali albicante subinterruptâ; spirâ acuminatâ dimidium testæ superante, anfractibus octo vel novem convexiusculis; aperturâ posticè latâ, anticè angustiore, margine externo lato, crasso, intus denticulis linearibus sex vel septem; margine interno tenui, albicante, intus denticulis prominentibus confertis albicantibus sex supra columellam continuis, columellâ interstitiisque rufescenti-brunneis; canali prominente angusto subrecurvo, margine interno violaceo, parte externâ transversim striatâ.*

Shell oblong, smooth, of an uniform light brown colour, whitish within; a narrow interrupted white band proceeds from the middle of the margin of the outer lip and continues along the posterior edge of the volutions to the apex; a less defined band traverses the dorsum more anteriorly, and terminates at the middle of the inner side of the aperture; spire acuminated, comprising more than one half the length of the shell; volutions eight to nine, slightly convex, suture a little elevated; aperture rather wide, shining, broader posteriorly; outer lip whitish, and thick externally, edge sharp, violaceous for a little distance within, with six or seven linear denticulations; inner lip, a fine whitish varix extends from the curve of the aperture to the anterior point of the channel; within this varix, at its centre, are five or six denticulations, closely set, parallel, prominent, proceeding over the columella, whitish at their edges, the interstices and the portion exterior to them being of a reddish brown colour; channel projecting, narrow, slightly recurved, with a dark violaceous colour within; a number of rather strong striæ pass from the inner side of the aperture to the edge of the anterior half of the outer lip.

Length, $\frac{50}{100}$ of an inch; width, $\frac{20}{100}$ of an inch.

*Hab.* ——? Cab. Gaskoin.

I have seen but one of this characteristic species: the aperture is allied in form to that of *Columbella Puella*, Sowerby. It may be convenient to readers to state, that the species *Col. Puella* is by accident, in the index of the 'Thesaurus Conchyl.' of Sowerby, jun., entered as *Col. Nympha*.

12. COLUMBELLA MARQUESA. *Testa oblongo-ovata, albicans; anfractibus sex vel septem; 4 vel 5 posticis roseis, longitudinaliter striatis, anfractibus tribus anticis lævibus spiraliter rufescenti-brunneo lineatis; spirâ acuminatâ, dimidium testæ æquante; aperturâ mediocri rectiusculâ; labii externi margine tenui posticè marginato, extus incrassato, edentulo, labio columellari lævi nitido, margine crassiusculo elevato; canali extus transversim striato, brevi.*

*Varietas hujus testæ major differt pro colore.*

Shell oblong-ovate, of a dull white colour; spire acuminated, forming about one-half the length of the shell; volutions six to seven, which, with the last volution, the columellar side of the shell forms an even convexity; the first four or five whorls are of a rose or bluish-pink colour, minutely longitudinally striated; the others are smooth, with somewhat distant fine brown lines, seven, eight, or so in number, passing spirally and continuously from just within the outer lip along the three last whorls, to the commencement of the pink striated volutions; aperture moderately wide and long, rather straight; outer lip sharp at its edge, forming a notch at its junction with its next whorl, thickened externally, without denticulation; inner lip also edentulate, smooth, shining, externally forming a rather thick, slightly elevated varix, which extends to the extremity of the channel, and from the whole length of this varix fine striæ pass over the dorsum of the channel to the anterior portion of the outer lip; channel short.

A variety of this species is rather larger in size, with the markings along the posterior edge of the three last whorls in somewhat distant, brown, square spots, from which rather distant undulating lines of a lighter colour pass longitudinally over the volutions, while in some specimens the colour is more *en masse* on the last whorl with small circular spots in it, showing the colour of the shell.

Length, $\frac{35}{100}$ of an inch; width, $\frac{15}{100}$ of an inch.
*Hab*. Marquesas. Cab. Gaskoin, Gubba.

13. **Columbella Austrina.** *Testa oblongo-ovata, lævis, nitens, albicans, punctulis distantibus pallidissime brunneis, fasciâque anticâ latâ brunneâ ornata; spirâ acuminatâ, anfractibus septem vel octo, convexiusculis; suturâ distinctâ; aperturâ latiusculâ, labio externo posticè intus emarginato; margine acutiusculo versus canalem incurvo, intus denticulis prominentibus octo vel novem; labio columellari recto, nitido, denticulis septem anticè positis, margine externo subelevato; peritremate albicante, aperturâ intus violaceo-brunneâ; canali subprominente, latiusculo, dorso canalis transversim striato.*

Shell oblong-ovate, of a dull white colour, smooth and shining, with light brown coloration, or interrupted from the anterior side of the volutions of the spire, and extending, more or less faintly, over them; a much darker broad band occupies three-fourths, at its centre, of the last whorl, the colour gradually softening into the whitish anterior, posterior, and outer portions of the whorl; spire acuminated, constituting less than one half the length of the shell; volutions seven to eight, rather convex, slightly ridged at the suture; aperture rather long, and moderately wide and straight; outer lip forms a broad notch at its juncture with the body of the shell, edge sharp, curving much towards the channel, externally thickened; within are eight or nine rather prominent denticulations, diminishing in size from their commencement at the anterior edge of the notch; inner lip straight, smooth and shining, with a row of about seven small, even, round teeth, which extend over the columella, and a very slightly raised sharp varix forms the outer edge of the aperture proceeding to the end of the channel; from this varix fine striæ pass over the dorsum of the channel to the anterior part of the outer lip; peritreme whitish, the interior of the shell of a rather violaceous colour; channel slightly projecting, moderately wide.

Length, $\frac{50}{100}$ of an inch; width, $\frac{22}{100}$ of an inch.
*Hab*. Australia. Cab. Cuming, Gaskoin.

14. **Columbella baccata.** *Testa oblongo-ovata, albicans, fasciis tribus interruptis saturate rufescenti-brunneis, punctulis opacis albicantibus rotundis per lineas obliquas vel longitudinales positis; spirâ acuminatâ, anfractibus septem, quorum tribus anticis lævibus, posticis obtuse longitudinaliter striatis; apice albicante; aperturâ latiusculâ intus albicante fasciis*

*brunneis tribus conspicuis; labio externo crassiusculo denticulis paucis intus prope centrum positis; labio interno recto, ad marginem externum varice prominente instructo; canali lato, obtuso.*

Shell oblong-ovate, of a dull white colour, with three dark reddish brown interrupted bands traversing the last whorl, the anterior extending from the fore-part of the outer lip to that of the aperture, the second continuing along the anterior margin of the volutions to near the apex, and the third passing similarly on their posterior margin to the same extent; opake, whitish, distinct, small round spots pervade the four anterior volutions, being in rows, obliquely or longitudinally placed; shell, within of a dull white colour, the three bands being conspicuous; spire acuminated; volutions seven, the three anterior smooth, the posterior obtusely striated longitudinally, apex whitish; aperture rather wide and straight; outer lip somewhat thick, having a few (one or two) rather prominent denticulations within the edge, about the centre; inner lip straight, with a rather strong varix at its outer edge; channel wide and obtuse; a few striæ pass obliquely over the anterior part of the columellar side of the dorsum.

Length, $\frac{25}{100}$ of an inch; width, $\frac{12}{100}$ of an inch.
*Hab.* ——? Cab. Gaskoin.

15. Columbella sagitta. *Testa oblonga, subcylindracea, angustata, lævis, nitens, semipellucidula, pallidissime brunnea; fasciis duabus angustis interruptis albidi-opacis, ab postico margine anfractuum ad apicem continuis; spirâ acuminatâ,* 3–5 *longitudinis testæ; anfractibus octo; aperturâ brevi, latâ; labio externo crassiusculo extus margine albini-opaco, versus canalem incurvato, labio interno lævi nitido; dorso anticè transversim striato; canali longiusculo, latiusculo; peritremate subquadrangulo.*

Shell oblong, subcylindrical, narrow, smooth, shining, semitransparent, of an extremely pale brown colour, with a very narrow interrupted opake white band arising from about the middle of the outer lip, and continuing along the anterior edge of the whorls to the apex; the markings forming this band are pointed, the points being toward the outer lip; large white opake markings occupy the entire posterior margin of the volutions, conjoined at the suture by broad bases, and, diminishing pyramidally to a point, extend across the volutions, and between each pyramidal mark, fitting the interstices, are dark, reddish-brown, barb-shaped colorations; spire acuminated, constituting three-fifths the length of the shell; volutions eight, very slightly convex; aperture short, rather wide; outer lip moderately thick, much incurvated to form the channel, with a whitish opake strong margin externally, edentulous; inner lip even, and shining, with a slight varix along its outer border, from which several rather prominent striæ traverse the anterior part of the dorsum to the fore part of the outer lip; the columella terminates angularly at the beginning of the channel; channel rather long, moderately wide; peritreme subquadrangular.

Length, $\frac{32}{100}$ of an inch; width, $\frac{12}{100}$ of an inch.
*Hab.* Africa; West Indies. Cab. Metcalfe, Cuming, Gaskoin, &c.

16. COLUMBELLA CONSPERSA. *Testa oblongo-ovata, pyramidalis, pallide brunnea, maculis anticis, albi-opacis, irregularibus; fasciis tribus albi-opacis, brunneo interruptis, duabus posticis ab aperturâ ad apicem continuis; spirâ acuminatâ anfractibus novem vel decem convexiusculis; aperturâ rectâ, latiusculâ; labio externo ad marginem acuto, margine externo lato prominente, intus denticulis quatuor quinque vel sex parvis; labio interno lævi, nitido, intus varice parvo denticulato, extus varice subprominente ad laterem canalis extenso; striis tenuibus per anticam partem dorsi continuis; canali longiusculo, angusto, leviter recurvo; peritremate subquadrangulo, lilacino.*

Shell oblong-ovate, pyramidal, of a dull pale-brown colour, with opake white, irregular markings on the anterior half of the last whorl; three opake white bands; the two anterior, interrupted and edged posteriorly with dark brown coloration, traverse the last whorl; the second, arising from the middle of the outer lip in narrow streaks, continues along the *anterior* edge of the volutions close to the suture, on to the apex; the third arises at the posterior part of the outer lip, sometimes in conjoined nodules, edged anteriorly and interrupted by a dark brown colour, passes over the dorsum and continues in irregularly broad, even streaks on the *posterior* margin of the whorls on to the apex. [These characters are marked in fine specimens, but are sometimes rendered less conspicuous by irregularity in the opake white deposition.] Spire acuminated, constituting rather more than one-half the length of the shell; volutions nine to ten, slightly convex; aperture straight, moderately wide; outer lip sharp at the edge, converges abruptly to form the channel, a broad prominent margin externally, within are four, five, or six denticulations; inner lip smooth and shining, within is a little ridge forming about six nodules or teeth, and at the outer edge is a rather strong varix extending on to the side of the channel, and from the outer side of which varix fine striæ traverse the anterior portion of the dorsum; channel rather long and narrow, slightly recurved; peritreme rather quadrangular, and of a lilac colour.

Length, $\frac{50}{100}$ of an inch; width, $\frac{22}{100}$ of an inch.
*Hab.* ——? Cab. Gaskoin.

17. COLUMBELLA FORMOSA. *Testa oblongo-ovata, lævis, nitida, colore flori-lacteo induta; fasciis duabus maculis albicantibus brunneisque interruptis; spirâ acuminatâ, ad dimidium longitudinis testæ æquali; anfractibus septem vel octo convexiusculis, suturâ subprominente; aperturâ latiusculâ et breviusculâ; labio externo lævi tenui, interno lævi; canali lato.*

Shell oblong-ovate, smooth and shining, of a light delicate cream colour, with two interrupted bands of opake white and brown markings mingled together, the first arising from the anterior point of the outer lip, and proceeding to the inner edge of the aperture; the second from the middle of the outer lip, and extending along the anterior margin of the volutions to the apex; spire acuminated, of half the length of the shell; volutions seven to eight, rather convex, suture slightly prominent; aperture somewhat wide and short; outer lip smooth and thin; inner lip even and also edentulous, no varix at its inner border; channel short and wide; a few striæ traverse the anterior part of the dorsum.

Length, $\frac{40}{100}$ of an inch; width, $\frac{20}{100}$ of an inch.

*Hab.* ——? Cab. Gaskoin.

18. Columbella hirundo. *Testa ovato-pyramidalis, lævis, nitens, pallida, strigis punctisque brunneis leviter maculata; spirâ mucronatâ, dimidium longitudinis testæ æquante; anfractibus novem vel decem planis; aperturâ latiusculâ; labio externo crasso albo semicirculari, dentibus duobus vel tribus latis posticis internis, margine externo crasso albo; labio interno lævi, subspirali, dente solitario majusculo ad posticam partem; canali longo, latiusculo, recurvo, rostris prominentibus, externo divergente quasi furcato ut in formâ caudæ hirundinis.*

Shell ovato-pyramidal, smooth and shining, pale in colour, lightly speckled with fine brown streaks and dottings, with intermissions of colour along the darker coloration of the posterior edge of the volutions; spire sharply mucronated, being about half the length of the shell; nine to ten flat volutions; aperture rather broad; outer lip thick, white, semicircular, with two or three broad denticulations within posteriorly, converges abruptly to form the channel; external margin strong and white; inner lip smooth, subspiral, with a single rather large node or tooth at the posterior part; channel long and moderately wide, recurved, beaks prominent, outer one diverging, giving a forked appearance, as in the tail of the swallow.

This species is of the stamp of *Col. bicanalifera* of Sowerby, Proc. Zool. Soc. part ii. page 113; Sowerby's Thesaurus, fig. 144.

Length, $\frac{60}{100}$ of an inch; width, $\frac{26}{100}$ of an inch.

*Hab.* Per the 'Samarang.' Cab. Gaskoin.

19. Columbella Californiana. *Testa oblongo-ovata, subpyramidalis, lævis, nitens, brunnea, vel brunneo variabilis, aliquando lineis tenuibus, fortioribus, aut latiusculis irregularibus; spirâ acuminatâ dimidium testæ subæquante; anfractibus septem convexis; aperturâ latâ subquadrangulari; labio externo tenuiusculo intus denticulato, labio interno leviter denticulato; dorso anticè transversim striato; peritremate purpureo-nigricante; canali brevi.*

Shell oblong-ovate, smooth and shining, rather pyramidal, of a brown colour, varying much in intensity and markings, in being sometimes uniform, in others with one or two thin darker coloured cinctures, or with broad and continuous dark irregular markings spirally passing on the whorls to be lost in the deeper colour of the apicine volutions; spire acuminated, about half the length of the shell; volutions seven, convex; aperture wide, subquadrangular; outer lip rather thin, denticulated within on its whole extent; inner lip slightly denticulated along its rather angular inner edge; fine striæ traverse the anterior part of the dorsum; peritreme of a dark purple-brown colour; channel very short.

Length, $\frac{40}{100}$ of an inch; width, $\frac{20}{100}$ of an inch.

*Hab.* Sandeago, California. Cab. Cuming, Gaskoin.

20. Columbella Iodostoma. *Testa oblongo-ovata, irregulariter brunnea; spirâ acuminatâ, apice cæruleo-brunneo; anfractibus septem vel octo raptim longitudinaliter decrescentibus; costellis prope aperturam minus prominentibus, costis ad posticum marginem in tuberculis posticè terminantibus; aperturâ posticè latiusculâ, anticè subacutâ; labio externo tenui, intus denticulato; labio interno intus denticulato, varice prominente marginato; dorso anticè extus striato; canali longiusculo; margine peritrematis purpureo-brunnescente.*

Shell oblong-ovate, of an irregular brown colour; spire acuminated, apex dark bluish brown colour; volutions seven to eight, greatly decreasing in circumference on to the apex, strongly ribbed longitudinally, less strongly towards the aperture, the ribs terminating in colourless nodules at the posterior edge of the volutions; aperture rather broad posteriorly, subacute anteriorly; outer lip thin, denticulated to its full extent within; inner lip denticulated within, bordered by a rather prominent varix, from the outside of which striæ pass over the dorsum of the channel; channel rather long and broad; edge of peritreme of a dark purplish brown colour.

Length, $\frac{50}{100}$ of an inch; width, $\frac{22}{100}$ of an inch.

*Hab.* Port Essington. Cab. (specimen unicum) Gaskoin.

Cypræa Clara. *Testa subcylindraceo-ovalis, rufescenti-cinerea, anticè et posticè supra extremitate maculâ brunneâ ornata; fasciis latis saturatioribus tribus; basi marginibusque albescentibus; aperturâ latiusculâ subspirali; labio externo crassiusculo, dentibus circa viginti-sex, regularibus, prominentibus; interno subspirali, dentibus circa viginti; sulco columellari profundo latoque, intus denticulato; marginibus rotundatis, incrassatis; extremitatibus obtusis, punctis minutissimis nigris notatis.*

Shell subcylindrical-ovate, of a lightish red-ash colour, with three broad bands placed about the anterior and posterior thirds and middle of the shell, the middle one being narrowest, the lighter colour of the shell being observed between them; a rather large reddish-brown marking over the anterior and posterior extremities, gradually fading along the margins; base whitish in a degree tinted with pink, round; the calcareous deposit forming the denticulations extends on to the sides of the shell; aperture moderately wide, subspiral; outer lip thick, with about twenty-six regular, even, rather prominent teeth occupying the entire thick edge of the lip but not extending on to the base; inner lip subspiral, about twenty projecting teeth terminating outwardly in an even line at the edge of the aperture; columellar sulcus broad and deep, which about eight of the anterior teeth traverse and strongly serrate its inner border, no columellar groove; the posterior teeth, proceeding but a little distance within the aperture, terminate on the columella; the sulcus being so deep causes a rather angular prominence of the inner side of the channel; margins thick and round; extremities, the external posterior broad and obtuse, the internal edge-formed concave within; the anterior project moderately and converge; all are dotted with very minute black points which extend in a slight degree on to the margins; channels, anterior rather narrow and short, posterior moderately wide, both inclining towards the columella.

Length, $1\frac{25}{100}$ inch; width, $\frac{75}{100}$ of an inch.

*Hab.* ——? Cab. Cuming.

This species is of the stamp of *Cyp. Isabella,* Linn.

## 3. On the Pterodactyles of the Chalk Formation. By J. S. Bowerbank, Esq., F.R.S. etc.

(Reptilia, Pl. IV.)

On the 14th May 1845 I exhibited at the Meeting of the Geological Society the snout and under jaws, extending from the point to about the middle of the cavitas narium, of a new and gigantic species of *Pterodactylus,* with some other bones, a portion of which belonged to the same individual, and others which have every appearance of having belonged to another animal of the same species *, and I then stated my belief that the bone figured by Prof. Owen, in the 'Transactions of the Geological Society,' vol. v. pl. 39, 2nd Series, would probably ultimately prove to be that of a Pterodactyl. From the great size of the snout, and the gigantic proportions also indicated by the bones accompanying it, I was induced to give it the specific name of *giganteus.* On a subsequent occasion, June 9, 1847, I continued my remarks on these Reptile remains, in a paper entitled "Microscopical Observations on the Structure of the Bones of *Pterodactylus giganteus* and other fossil animals," in which I endeavoured to prove, by the strongly-marked peculiarities of the bone-cells in Mammals, Birds and Reptiles, that the whole of the bones described in my former paper, and those figured by Prof. Owen in the Trans. Geol. Soc., 2nd Series, vol. vi. pl. 39. figs. 1 & 2, were in truth of purely Reptilian character; and I also figured a radius and ulna from the Cabinet of Mrs. Smith of Tunbridge Wells, of nearly the same gigantic proportions as the one formerly in the possession of the Earl of Enniskillen, but now in my collection (fig. 1. pl. 39, Geol. Trans.), and a bone from the Cabinet of Mr. Toulmin Smith, equivalent to that represented by Prof. Owen in the same plate, fig. 2, which bones presented the same structural evidence of their Reptilian nature, and which description of evidence has, I am happy to say, been more fully developed and firmly established by the talented coadjutor of Prof. Owen, Mr. Quekett of the Royal College of Surgeons, who has publicly taught it in the Theatre of that Institution without question or contradiction of its truth. This great radius and ulna in Mrs. Smith's Collection I referred to my previously established species, *P. giganteus*, believing at that time that they were probably the bones of a fully developed animal, while those previously described were the remains of animals not developed to the full extent of their capability.

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* Quart. Geol. Journ. vol. ii. p. 7. pl. 1. figs. 1–6.

Since the publication of these specimens it has been my good fortune to obtain the snout of another and still larger species of Pterodactyl, from the same pit at Burham in Kent, and which it is probable will ultimately prove to belong to the species to which the enormous pair of bones in the Cabinet of Mr. Charles of Maidstone belongs. Should this hereafter prove to be the case, it will then remain to be shown whether the beautiful specimen of radius and ulna in the Collection of Mrs. Smith of Tunbridge Wells, and the bone nearly corresponding in size with them, and which was in the possession of the Earl of Enniskillen, belong to the newly discovered species, which I purpose designating *Pterodactylus Cuvieri*, or to the previously named species, *P. giganteus*; or whether there be yet a third species existing in the chalk, to which these bones of an intermediate size may hereafter be referred *.

The snout of the new species, *P. Cuvieri*, differs materially in its form from the same part of *P. giganteus*: while the latter agrees as nearly as possible in that respect with *P. crassirostris* and *P. brevirostris*, the former appears to approach very closely the proportions of *P. longirostris*. Thus, if we take the length of the snout from the distal end of the cavitas narium, as compared with its height, at the same point of *P. crassirostris*, *P. brevirostris* and *P. giganteus*, we find the relative proportions to be,—of the first-named, 29 of height to 56 of length; of the second, 28 of height to 50 of length; and of the third, 28 of height to 58 of length; we may therefore reasonably conclude that, when perfect, the head of *P. giganteus* very closely resembled in its proportions that of *crassirostris*. The length of the fragment of the snout of *P. Cuvieri* at the upper portion of the head is 7·20 inches; at the palatal bones, 6·38 inches; and in this space there are sockets for twelve teeth on each side. The distance between each tooth is about 1½ of the long diameter of the sockets, which are somewhat irregularly placed, but are nearly equidistant from each other. The pair of teeth at the distal end of the snout appear, both from the position of the sockets and the tooth remaining *in situ*, to have been projected more or less forward, in a line with the palatal bones. The head appears to have been exceedingly narrow throughout the whole of its length. At the third pair of teeth from the distal end of the snout it measures ·66 inch, and at the eleventh pair of teeth, ·78 inch wide. Opposite the seventh pair of teeth the skull curves upward suddenly and considerably, which is not the case at any part of the corresponding portion of the skull of *P. longirostris*; it is therefore probable, that although in the number and disposition of the teeth in the upper jaw, as far as our evidence goes, it strongly resembles *longirostris* in its structure, yet in the length of its skull it is probably shorter in proportion than that species, apparently in that respect being intermediate between *longirostris* and *crassirostris*; thus uniting the long-nosed with the short-nosed species of Pterodactyls.

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* A third species, *C. compressirostris*, has since been described by Prof. Owen, page 95, Part III. of 'The Fossil Reptilia of the Cretaceous Formations,' published by the Palæontographical Society, and to which species the bones in question have been referred.

There are no remains of the cavitas narium in the new species, but it is not to be expected that it should make its appearance so near to the termination of the snout, as in *longirostris* the distal portion of that cavity is situated as far backward from the last of the dental series of the upper jaw as that tooth is from the end of the snout. The number of teeth on each side of the upper jaw in *P. longirostris* is twelve, and the like number of sockets are apparent in our specimen; it is therefore probable that we have the whole of that portion of the head.

If we estimate the size of the head on the scale of *P. longirostris*, it would appear to be 25·52 inches in length; but as we have observed that the skull curves upward considerably at the seventh pair of teeth, it is probable that its length may not be so much.

The length of the wing of *P. crassirostris* in proportion to the length of its head is 3·91 times. The length of the wing of *P. longirostris* compared with the length of its head is 2·51; if therefore we assume, from the peculiar form of the snout of *P. Cuvieri*, that the head as regards length is intermediate in its proportions between *P. crassirostris* and *P. longirostris*, it should be 3·21 parts of the length of the wing.

The snout contracts in width gradually upwards from the sockets of the teeth, so that its upper portion forms a narrow ridge, and this is its form as far backward as it can be traced. The palatal bones are depressed, the suture forming a prominent ridge as far as it is visible, but not in so great a degree as in *P. giganteus*.

One of the first pair of teeth remains in its socket; the whole of the other large teeth are displaced, but there are two of them imbedded in the chalk, one within an inch and the other an inch and a half of the sockets, and in the fifth right and eighth left socket there is a rudimentary tooth *in situ*. The largest of the displaced teeth exceeds 1·32 inch in length, and has been buried in the socket for nearly an inch; the second large tooth, which is imbedded near the third pair of sockets, does not exceed an inch in length; both teeth are slightly curved, smooth, and are hollow at the base.

The great diversity in the size of these remarkable Reptiles will render a short review of some of the known species interesting; and if we arrange them in order, as they increase in size, the following will be the series:—1. *P. brevirostris*, 2. *P. longirostris*, 3. *P. crassirostris*, 4. *P. Bucklandi*, 5. *P. grandis*, 6. *P. giganteus*, 7. *P. Cuvieri*; and to these may be added the bones in the possession of Mrs. Smith, the

Earl of Enniskillen, and Mr. Charles. Of these, *brevirostris, crassirostris* and *giganteus* are short-nosed species, *longirostris* and *Cuvieri* long-nosed. With regard to relative length and proportions of the other parts of the skeleton we have ample means to arrive at tolerably correct conclusions, in consequence of the nearly perfect condition of *brevirostris, crassirostris* and *longirostris*. In the former two we find the cervical vertebræ short and thick, the length being about equal to the height in the latter of the two, while in *longirostris* they vary in length from three to five times their own diameter at the middle. Very uncertain results therefore would arise from finding single bones of this portion of the skeleton, excepting that a long and attenuated cervical vertebra would seem to indicate a corresponding length of snout; but from the other bones of the animal, more especially those of the wing, much more satisfactory results may arise. Upon a careful measurement of the casts in the British Museum from the original specimens, I find the following to be the length of the bones of the wing of *P. longirostris*:—

| | inch. | | | |
|---|---|---|---|---|
| Humerus | 1·25 | = | 8·55 | of length of wing. |
| Radius and ulna | 1·90 | = | 5·57 | ,, |
| Carpus | 0·13 | = | 0·82 | ,, |
| Metacarpus | 1·34 | = | 7·97 | ,, |
| 1st Phalange | 1·90 | = | 5·57 | ,, |
| 2nd ,, | 1·75 | = | 6·10 | ,, |
| 3rd ,, | 1·25 | = | 8·55 | ,, |
| 4th ,, | 1·17 | = | 9·13 | ,, |
| | 10·69 | | | |

| | inches. |
|---|---|
| The length of the head | 4·25 |
| From the tip of the nose to the commencement of the cavitas narium | 2·10 |
| Height of the skull at the commencement of the cavitas narium | 0·38 |
| Length of the femur | 1·34 |
| Length of the tibia | 1·90 |
| Smallest diameter of the radius near the distal extremity | 0·14 |

By these measurements it is apparent that the tibia, radius and ulna and 1st phalange are equal in length. The humerus and 3rd phalange are also equal to each other, and so likewise are the metacarpus and femur equal to each other. If we also compare the smallest diameter of the radius, 0·14 inch, with its length, 1·90 inch, we find that the bone is $13\frac{8}{14}$ diameters long, and in *P. Macronyx* (*Bucklandi*) it is $13\frac{9}{32}$. We may therefore be enabled, by keeping these comparative measurements in view, to predict with a tolerable degree of certainty the spread of wing of any Pterodactyl of which we may find one or more of the principal bones of the wing, and especially if we take into consideration the comparative length of each bone with regard to its total extension, as exhibited in the table of the dimensions of *P. longirostris*. In the case of the great specimens of radius we may arrive at their length in many cases, although the bone may be imperfect at even both terminations. Thus the diameter of the smallest portion of the bone formerly in the possession of the Earl of Enniskillen and figured by Prof. Owen, is ·81 inch at the smallest portion of the shaft: this bone therefore, on the scale of 13½ diameters to its length, should be 10·93 inches in length. The measurement of the smallest portion of the bone belonging to Mrs. Smith (Geol. Journ. vol. iv. pl. 2. fig. 1*a*) is ·77 inch: we may therefore, by the same rule, conclude that its length was 10·39 inches when perfect. The length of the imperfect ulna beside it is 9·25 inches in the specimen. The diameter of the smallest portion of the bone (Geol. Journ. vol. ii. pl. 1. fig. 6) is ·45 inch, which, in the proportion of 13½ diameters to its length, will give 6·07 inches for its length. The width of the corresponding bone in the possession of Mr. Charles of Maidstone is 1·25 inch at the smallest diameter: by the same rule, therefore, the approximate length should be 16·87. The remains of the bone alongside of it is, although imperfect at both ends, actually 12·25 inches in length.

Upon these grounds therefore, in every case derived as much as possible from direct measurements from the skeletons of the respective species, I have given the following table of the dimensions of a series of species of Pterodactyls, the most interesting either from the state of perfection in which their remains have been found, or from the gigantic proportions which they present; and thus have endeavoured to realize to the mind an idea, as nearly as possible correct, of the dimensions of the animals when alive.

Table of the relative proportions of known species of *Pterodactylus*, with the length of each of the wing-bones and half of the width of the body.

| | Humerus. | Radius and Ulna. | Carpus. | Metacarpus. | 1st Phalange. | 2nd Phalange. | 3rd Phalange. | 4th Phalange. | Half width of body. | Total expansion from tip to tip of wing. | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | in. | in. | in. | in. | in. | in. | in. | in. | | ft. | in. |
| P. brevirostris ... | 0·48 | 0·75 | 0·06 | 0·52 | 0·82 | 0·76 | 0·48 | 0·35 | 0·19 | 0 | 9 |
| P. longirostris ... | 1·25 | 1·90 | 0·13 | 1·34 | 1·90 | 1·75 | 1·25 | 1·17 | 0·47 | 1 | 10 |
| P. crassirostris... | 2·08 | 4·42 | 0·34 | 1·32 | 2·83 | 2·53 | 2·08 | 2·32 | 1·10 | 3 | 2 |
| P. Bucklandi..... | 3·25 | 4·25 | 0·40 | 3·75 | 3·91 | 4·83 | 3·25 | 3·00 | 1·06 | 4 | 7 |
| P. grandis ........ | 3·75 | 5·70 | 0·39 | 4·02 | 5·70 | 5·50 | 2·75 | 3·51 | 1·42 | 5 | 5 |
| P. giganteus...... | 4·43 | 6·74 | 0·46 | 4·75 | 6·74 | 6·21 | 4·43 | 4·14 | 1·68 | 6 | 7 |
| P. (Mrs. Smith's) | 6·76 | 10·39 | 0·70 | 7·26 | 10·39 | 9·49 | 6·76 | 6·33 | 2·59 | 10 | 2 |
| P. Cuvieri ........ | 10·99 | 16·87 | 1·14 | 11·79 | 16·87 | 15·56 | 10·99 | 10·29 | 4·22 | 16 | 6 |

In the above table I have presumed that the largest bones should be associated with the snout described as the type of *P. Cuvieri*, but the truth of this assignment of the bones belonging to Mr. Charles can alone be determined by the acquisition of more complete specimens of the animal than those at present known.

In the construction of this table I have taken the proportions of *P. longirostris* as the foundation, as it is the only species from which I could get the measurements of all the bones of the wing from the same animal; but it must not be supposed that the restorations effected in the table will be absolutely correct at all times in its application, for we see that in *P. longirostris* the radius and first phalange are equal, but in *crassirostris* and *Bucklandi* this is not the case: the greatest discrepancy rests with *crassirostris*, while *Bucklandi* and *brevirostris* accord much more nearly with the proportions of *longirostris*; and if we may judge by the comparative difference between those bones in *longirostris* on the one part, and *Bucklandi* and *crassirostris* on the other, it may perhaps be fairly surmised that the greater length of wing would be found to exist in the long-nosed species, and consequently that *Bucklandi* will prove to belong to the short-nosed ones; and this also would seem to be indicated by what remains of the cervical vertebræ in the original specimen in the British Museum.

Prof. Owen, in treating of these animals in my late friend Mr. Dixon's work 'On the Geology and Fossils of the Tertiary and Cretaceous Formations of Sussex,' has thought proper to re-name *P. giganteus*, and designate it *P. conirostris*, Owen. I certainly did not lend my specimens to my late friend Mr. Dixon for the illustration of his work, with a view of having the name which I had assigned to this new and gigantic species subverted, and without in the slightest degree being consulted on the subject. Nor can I concur with the reasons given by Prof. Owen for thus re-naming it, as the name *giganteus* was not given, as stated by the learned Professor, "because certain bones of another and larger animal, of a different species, have been erroneously referred to it;" but, in truth, from its being the largest distinct species at that time known, exceeding *P. Bucklandi* (or *Macronyx*) by two feet in the spread of its wings, and *P. grandis* of Cuvier by above a foot. The beautiful specimen of radius and ulna in the possession of Mrs. Smith, and subsequently figured in my second paper, was at that time unknown to me, and the bone then in the possession of the Earl of Enniskillen was claimed by the Professor as that of a bird. I had therefore no other material than that in my own possession on which to base my name of *giganteus*.

If the learned Professor's reason for the proposed change of name is to hold good, that of exclusive fitness in specific nomenclature, then the one he proposes is also inappropriate, as it might be with equal propriety given to either *crassirostris* or *brevirostris*; or if specific names, based on comparisons of size, are to be extinguished, and new names given on the discovery of new species, there would be no end of the confusion generated; thus, as *P. brevirostris* is thicker in its proportions than *crassirostris*, they would require to exchange names, or the latter at least to be re-named; *medius* would no longer be *medius*, with the addition of our new species, and *grandis* would no longer be grand in comparison. Into what an unenviable state of confusion should we not plunge nomenclature if we were to adopt the *practice* of the learned Professor, instead of the precepts so judiciously laid down by himself and others of the Committee of Nomenclature of the British Association, and which I quote as a justification on my part for my refusal to adopt the learned Professor's exchange of my name for the one he has proposed!

In page 4 of the Report, under the head of "Law of Priority the only effectual and just one," we find the following passages:—"It being admitted on all hands that words are only the conventional signs of ideas, it is evident that language can only attain its end effectually by being permanently established and generally recognized. This consideration ought, it would seem, to have checked those who are continually attempting to subvert the established language by substituting terms of their own coinage." . . . . . . "Now in zoology no one person can subsequently claim an authority equal to that possessed by the person who is the first to define a new genus or describe a new species; and hence it is that the name originally given, even though it be inferior in point of elegance or expressiveness to those subsequently proposed, ought, as a general principle, to be permanently retained. To this consideration we ought to add the injustice of erasing the name originally selected by the person to whose labours we owe our first knowledge of the object." To these excellent principles the learned Professor has given the sanction of his signature. Prof. Owen, in the article on *Pterodactylus* in Mr. Dixon's work, has not quoted my observations on those Reptiles so fully as I could have wished; inasmuch as he has adverted to the strongly-marked peculiarities of the bone-cells, which are the principal characters in the question at issue, in so slight a manner, as almost to induce me to imagine that he must have forgotten them entirely. I shall simply content myself in challenging Prof. Owen to produce any such general structure and proportions of the bone-cells from the skeleton of any recent or extinct bird as those existing in the long bone described as *Cimoliornis*, or to produce any such radius and ulna of a bird containing similar bone-cells as those in the possession of Mrs. Smith, and figured by me in my paper in the 'Quarterly Journal of the Geological Society for February 1848,' vol. iv. pl. 2.

On the subject of the strictures with which Prof. Owen has favoured me at the conclusion of his observations in Mr. Dixon's work, and how far I have been "wanting in a due comprehension of the subject, and have been a hindrance instead of a furtherance of true knowledge," I am content to leave to the judgement of those who may feel a sufficient degree of interest to induce them to peruse what I have written in my former papers on the Pterodactyles of the Chalk.

January 28, 1851.

R. H. Solly, Esq., F.R.S., in the Chair.

The following papers were read:—

## 1. ON A NEW SPECIES OF PTERODACTYLE (PTERODACTYLUS COMPRESSIROSTRIS, OWEN) FROM THE CHALK; WITH SOME REMARKS ON THE NOMENCLATURE OF THE PREVIOUSLY DESCRIBED SPECIES. BY PROF. OWEN, F.R.S.

(Reptilia, Pl. V.)

The honour of having first made known the existence of remains of the Pterodactyle in the Chalk deposits belongs to James Scott Bowerbank, Esq., F.R.S. This indefatigable collector had the good fortune to receive in 1845, from the Kentish Chalk, the characteristic jaws and teeth, with part of the scapular arch and a few other bones, of a well-marked species of Pterodactyle, and the discovery was briefly recorded in the 'Quarterly Journal of the Geological Society of London,' and in the 'Proceedings' of the Society for May 14, 1845, with an illustrative plate (pl. 1).

Mr. Bowerbank concludes his notice by referring to a large fossil wing-bone from the chalk, previously described and figured by me in the 'Geological Transactions,' and remarks that, "if it should prove to belong to a Pterodactyle, the probable expansion of the wings would reach to at least eight or nine feet. Under these circumstances," he says, "I propose that the species described above shall be designated *Pterodactylus giganteus*." (*loc. cit.* p. 8.) Subsequent discoveries and observations have inclined the balance of probability in favour of the Pterodactylian nature of the fossils to which Mr. Bowerbank refers, but have shown them to belong to distinct species.

These fossils are not, indeed, amongst the characteristic parts of the flying reptile: one of them is the shaft of a long bone exhibiting those peculiarities of structure which are common to birds and pterodactyles; the other shows an articular extremity, which, in our present ignorance of those of the different bones of the Pterodactyle, has its nearest analogue in the distal trochlea of the bird's tibia. These two specimens, which are figured in the sixth volume of the Second Series of the 'Transactions of the Geological Society,' 1840, pl. 39. figs. 1 & 2, were transmitted to me by the Earl of Enniskillen and Dr. Buckland, as being "the bones of a bird" (p. 411), and my comparisons of them were limited to that class.

The idea of their possibly belonging to a Pterodactyle did occur to me, but it was dispelled by the following considerations. The act of flight—the most energetic mode of locomotion—demands a special modification of the Vertebrate organization, in that subkingdom, for its exertion. But in the class *Aves*, in which every system is more or less adapted and co-adjusted for this end, the laws of gravitation seem to forbid the successful exercise of the volant powers in species beyond a certain bulk; and when this exceeds that of the Condor or Albatros, as, for example, in the Cassowary, the Emeu, or the Ostrich, although the organization is essentially that of the Vertebrate animal modified for flight, flight is impossible; and its immediate instruments, to the exercise of which all the rest of the system is more or less subordinated, are checked in their development; and, being unfitted for flight, they are not modified for any other use. There is not, perhaps, a more anomalous or suggestive phænomenon in nature than a bird which cannot fly! A small section of the Mammalia is modified for flight; but the plan of the organization of that warm-blooded class being less directly adapted for flight than that of birds, the weight and bulk of the body which may be raised and transported through the air are restricted to a lower range, and the largest frugivorous Bat (*Pteropus*) does not exceed the Raven in size. The Reptilian modification of the Vertebrate type would seem to be still less fitted for any special adjustment to aërial locomotion; and in the present day we know of no species of the class that can sustain itself in the air which equals a Sparrow in size. And the species in question—the little *Draco volans*—sails rather than flies, upborne by its outstretched costal parachute in its oblique leaps from bough to bough.

Of the remarkable reptiles now extinct, which, like the Bats, had their anterior members modified for plying a broad membranous wing, no species had been discovered prior to 1840 which surpassed the largest of the *Pteropi*, or Flying-Foxes, in the spread of those wings, and there was, *à priori*, a physiological improbability that the cold-blooded organization of a Reptile should by any secondary modification be made to effect more in the way of flight, or be able to raise a larger mass into the air, than could be done by the warm-blooded Mammal under an analogous special adaptation. When, therefore, the supposed bird's bone (Geol. Trans. 1840, pl. 39. fig. 1) was first submitted to me by Dr. Buckland, which on the Pterodactyle hypothesis could not be the humerus, but must have been one of the smaller bones of the wing, its size seemed decisive against its reference to an animal of flight having a cold-blooded organization. The subsequent discovery of the portion of the skull of the Pterodactyle, described by Mr. Bowerbank at the last meeting of the Society (Jan. 14), shows that the resources of Creative power in past time surpass the calculations that are founded upon actual nature.

It is only the practised Comparative Anatomist that can fully realize the difficulty of the attempt to resolve a palæontological problem from such data as the two fragments of long bones first submitted to me in 1840. He alone can adequately appreciate the amount of research involved in such a generalization as that "there is no bird now known, north of the equator, with which the fossils can be compared;" and when, after a wearying progress through an extensive class, the species is at length found to which the nearest resemblance is made by the fragmentary fossil, and the differences are conscientiously pointed out—as when, in reference to the humerus of the Albatros, I stated that "it differs therefrom in the more marked angles which bound the three sides"—the genuine worker and searcher after truth may conceive the feelings with which I find myself misrepresented as having regarded the specimens "as belonging to an extinct species of Albatros." My reference of the bones even to the longipennate tribe of natatorial birds is stated hypothetically and with due caution: "On the supposition that this fragment of bone is the shaft of the humerus, its length and comparative straightness would prove it to have belonged to one of the longipennate natatorial birds equalling in size the Albatros." (*loc. cit.* p. 411.)

Since the discovery has been made of the manifestly characteristic parts of the genus *Pterodactylus* in the Burham chalk-pit, it has been objected that the bones first discovered there, and described by me as resembling birds of flight, "are so extremely *thin*, as to render it most improbable that they could ever have sustained such an instrument of flight as the powerful wing of the Albatros, or of any other bird: their tenuity is in fact such," says the *ex post facto* Objector, "as to point out their adaptation to support an expanded membrane, but not pinions *."

The reply to this assertion need only be a simple reference to nature: sections of the wing-bones of birds may be seen in the Museum of the Royal College of Surgeons, and have been exposed to view, since the discovery of their structure by the Founder of that Collection, in every Museum of Comparative Anatomy worthy to be so called.

To expose the gratuitous character of the objection above cited, I have placed on the table a section of the very bone that directly sustains the large quill-feathers in the Pelican; its parietes are only half as thin as those of the antibrachial bone of the great Pterodactyle which is figured in my 'History of British Fossil Reptiles,' pl. 4, and is not thicker than those of the bone figured in the Geological Transactions, 1840, above cited.

HUNTER, who had obtained some of the long bones with thin walls and a wide cavity from the Stonesfield slate, has entered them in his MS. Catalogue of Fossils as the "Bones of Birds," and perhaps no practical anatomist had had greater experience in the degree of tenuity presented by the compact walls of the large air-cavities of the bones in that class. Of all the modifications of the dermal system for combining extent of surface with lightness of material, the expanded feather has been generally deemed the consummation. Well might the eloquent Paley exclaim, "Every feather is a mechanical wonder: their disposition all inclined backwards, the down about the stem, the overlapping of their tips, their different configuration in different parts, not to mention the variety of their colours, constitute a vestment for the body so beautiful and so appropriate to the life which the animal is to lead, as that, I think, we should have had no conception of anything equally perfect, if we had never seen it, or can imagine anything more so." It was reserved for the author of the 'Wonders of Geology' to prefer the leathern wing of the Bat and Pterodactyle as the lighter form, and to discover that such a structure as is displayed in the bone described and figured in the 'Geol. Trans.'

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* Mantell, 'Wonders of Geology,' 1848, vol. i. p. 441.

vol. vi. pl. 39, was a most improbable one to have sustained a powerful wing of any bird![*] Let me not be supposed, however, to be concerned in excusing my own mistake; I am only reducing the unamiable exaggeration of it. Above all things, in our attempt to gain a prospect of an unknown world by the difficult ascent of the fragmentary ruins of a former temple of life, we ought to note the successful efforts, as well as the occasional deviations from the right track, with an equal glance, and record them with a strict regard to truth. The existence of a species of Albatros, or of any other actual genus of bird during the period of the Middle Chalk, would be truly a wonder of Geology; not so the existence of a bird of the longipennate family.

I still think it for the interest of science, in the present limited extent of induction from microscopic observation, to offer a warning against a too hasty and implicit confidence in the forms and proportions of the Purkingean or radiated corpuscles of bone, as demonstrative of such minor groups of a class as that of the genus *Pterodactylus*. Such a statement as that "these cells in *Birds* have a breadth in proportion to their length of from one to four or five; while in *Reptiles* the length exceeds the breadth ten or twelve times," only betrays the limited experience of the assertor. In the dermal plates of the Tortoise, *e. g.*, the average breadth of the bone-cell to its length is as one to six, and single ones might be selected of greater breadth.

With the exception of one restricted family of Ruminants, every Mammal, the blood-discs of which have been submitted to examination, has been found to possess those particles of a circular form: in the *Camelidæ* they are elliptical, as in birds and reptiles. The bone-cells have already shown a greater range of variety in the Vertebrate series than the blood-discs. Is it then a too scrupulous reticence to require the evidence of microscopic structure of a bone to be corroborated by other testimony of a plainer kind, before hastening to an absolute determination of its nature, as has been done with regard to the Wealden bone, figured in the Geol. Trans., 2nd Series, vol. v. pl. 13. fig. 6[†]? As a matter of fact, the existence of Pterodactylian remains in the chalk was not surmised through any observation of the microscopic structure of bones that are liable to be mistaken for those of birds, but was first plainly proved by the characteristic portions of the Pterodactyle defined by Mr. Bowerbank, as follows, in his original communication of this discovery to the Geological Society of London, May 14, 1845:—

"I have recently obtained from the Upper Chalk[‡] of Kent some remains of a large species of *Pterodactylus*. The bones consist of—

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[*] Mantell, 'Wonders,' &c. ed. 1848, vol. i. p. 441.

[†] Compare, for example, two of the longest of the cells figured by Mr. Bowerbank in pl. 1. fig. 9, 'Quarterly Journal of the Geological Society,' vol. iv. as those of a bird, with two of the widest of the cells figured in fig. 1 of the same plate as those of the Pterodactyle; and contrast the want of parallelism in the bone-cells of the Wealden bone, fig. 9, with the parallelism of the long axes of the cells in that of the Albatros, fig. 3.

[‡] Mr. Toulmin Smith, in an able paper "On the Formation of the Flints of the

"1. The fore part of the head as far as about the middle of the *cavitas narium*, with a corresponding portion of the under jaws, many of the teeth remaining in their sockets.

"2. A fragment of the bone of the same animal, apparently a part of the coracoid.

"3. A portion of what appears to be one of the bones of the auricular digit, from a chalk-pit at Halling.

"4. A portion of a similar bone, from the same locality as No. 1.

"5. The head of a long bone, probably the tibia, belonging to the same animal as the head, No. 1.

"6. A more perfect bone of the same description, not from the same animal, but found at Halling."

In a subsequent communication, dated December 1845, Mr. Bowerbank states with regard to the specimens Nos. 5 and 6, which he supposed to be parts of a tibia, that "on a more careful comparison with the figures of *Pterodactylus* by Goldfuss, I am inclined to believe they are more likely to be portions of the ulna."

With respect to the long bone, No. 6 in the above list, comparing it with that figured in the Geol. Trans., 2nd Series, vol. vi. pl. 39. fig. 1, and referred by me to *Cimoliornis diomedeus*, Mr. Bowerbank writes:—

"Although the two specimens differ greatly in size, there is so strong a resemblance between them in the form and regularity of the shaft, and in the comparative substance of the bony structure, as to render it exceedingly probable that they belong to the same class of animals;" and he concludes by remarking, that "If the part of the head in my possession (see fig. 1) be supposed similar in its proportions to that of *Pterodactylus crassirostris*,—and there appears but little difference in that respect,—it would indicate an animal of comparatively enormous size. The length of the head, from the tip of the nose to the basal extremity of the skull, of *Pt. crassirostris* is about $4\frac{5}{8}$ inches, while my specimen would be, as nearly as can be estimated, $9\frac{1}{8}$ inches. According to the restoration of the animal by Goldfuss, *Pt. crassirostris* would measure as nearly as possible three feet from tip to tip of the wings, and it is probable that the species now described would measure at least six feet from one extremity of the expanded wings to the other; but if it should hereafter prove that the bone described and figured by Prof. Owen belongs to a Pterodactyle, the probable expansion of the wings would reach to at least eight or nine feet. Under these circumstances I propose that the species described above shall be designated *Pterodactylus giganteus*." (Quarterly Geol. Journ. vol. ii. p. 8.)

In a subsequent memoir, read June 9, 1847, and published in the 'Quarterly Journal of the Geological Society,' vol. iv. February 1848, Mr. Bowerbank gives figures of the 'bone-cells' from the jaw of a

Upper Chalk," in the 'Annals of Natural History,' vol. xx. p. 295, affirms that no upper chalk exists in the localities whence the above-defined specimens came. They are from the "Middle Chalk."

Pterodactyle (pl. 1. fig. 1), from the shaft of the bone in question (*ib.* fig. 2), and from the femur of a recent Albatros (*ib.* fig. 3), in corroboration of the required proof: and he adds, "Fortunately the two fine specimens from the rich collection of Mrs. Smith of Tonbridge Wells, represented by fig. 1. pl. 2, in a great measure justify this conclusion; and in the bone *a*, which is apparently the corresponding bone to the one represented by fig. 1 in Prof. Owen's paper, the head is very nearly in a perfect state of preservation." (*op. cit.* p. 5.) Mr. Bowerbank, in his explanation of plate 2, describes the two fine specimens above mentioned as "Fig. 1. Radius and ulna of *Pterodactylus giganteus*, in the cabinet of Mrs. Smith of Tonbridge Wells." (*tom. cit.* p. 10.) He proceeds to state, "There are two other similar bones, imbedded side by side, in the collection of Mr. Charles of Maidstone, of still greater dimensions than those from the cabinet of Mrs. Smith;" and he assigns his grounds for the conclusion, that "the animal to which such bones belonged could, therefore, have scarcely measured less than fifteen or sixteen feet from tip to tip of its expanded wings."

The Committee of the British Association for the Reform and Regulation of Zoological Nomenclature, amongst other excellent rules, have decided that, "A name which is glaringly false shall be changed" (Report, p. 113). I submit that this is the case when the name *giganteus* is proposed for a species less than half the size of others previously discovered. Now, although those remains of the truly gigantic Pterodactyles had not been demonstrated to be such, yet they were suspected so to be by Mr. Bowerbank when he proposed the name *giganteus*; and the name is in fact proposed, subject to the condition of that demonstration, and under the evident belief that they belonged to the same species as the obvious Pterodactyle remains he was describing. He says, "Under these circumstances I propose that the species shall be designated '*giganteus*'," and the circumstances referred to are the probable case that the bones, which from their large size I had supposed to belong to a bird, should prove to belong to a Pterodactyle.

The Committee for the Reform of Zoological Nomenclature next proceed to determine that, "Names not clearly defined may be changed. Unless a species or group is intelligibly defined when the name is given, it cannot be recognised by others, and the signification of the name is consequently lost. Two things are necessary before a zoological term can acquire any authority, viz. *definition* and *publication*. Definition properly implies a distinct exposition of essential characters, and in all cases we conceive this to be indispensable." (Report, pp. 113, 114.) Now with regard to the *Pterodactylus giganteus*, Mr. Bowerbank had unreservedly applied the term to the species to which the long wing-bone first described by me might appertain, under the circumstances of its being proved to belong to a Pterodactyle; inasmuch as he had figured two similar and equal-sized bones in the 'Quarterly Journal of the Geological Society,' vol. iv. pl. 2. fig. 1 (Proceedings of the Society for June 9, 1847), as the "radius and ulna of *Pterodactylus giganteus*." So far as a species can be intelligibly defined by figures, that to which the term *giganteus* was in 1845 provisionally, and in 1847 absolutely applied, seemed to be clearly enough pointed out by the plate 2 in the work above cited. But, with the large bones appropriately designated by the term *giganteus*, some parts of a smaller Pterodactyle, including the portions of jaws first announcing the genus in the Chalk, had been associated under the same name. Supposing those bones to have belonged to a young individual of the *Pterodactylus giganteus*, no difficulty or confusion would arise. After instituting, however, a rigid comparison of these specimens, when drawing up my Descriptions for Mr. Dixon's work, I was compelled to arrive at the conclusion that the parts figured by Mr. Bowerbank in plate 2, figs. 1 & 2, of vol. ii. of the 'Quarterly Geological Journal,' and the parts figured in plate 2, figs. 1 *a* & *b*, of vol. iv. of the same Journal, both assigned by Mr. Bowerbank to the *Pterodactylus giganteus*, belonged to two distinct species. The portions of the scapula and coracoid of the Pterodactyle (pl. 1. fig. 2, *tom. cit.*) indicated by their complete anchylosis that they had not been part of a young individual of the species to which the large antibrachial bones (pl. 2. fig. 1 *a* & *b*, *tom. cit.*) belonged; although they might well appertain to the species to which the jaws (pl. 1. fig. 1) belonged. Two species of Pterodactyle were plainly indicated, as I have shown in the above-cited work, by my lamented friend Mr. Dixon, 'On the Tertiary and Cretaceous Deposits of Sussex,' 4to, p. 402. The same name could not be retained for both, and it was in obedience to this necessity, and not with any idea of detracting an iota from the merit of Mr. Bowerbank's original announcement of the existence of a Pterodactyle in the chalk, that I proposed the name of *conirostris* for the smaller species, then for the first time distinctly defined and distinguished from the larger remains to which the name *giganteus* had also been given by Mr. Bowerbank. I proposed the name, moreover, provisionally and with submission to the 'Committee for the Reform of Zoological Nomenclature,' according to whose rules I believed myself to be guided.

My conclusions as to the specific distinction of the remains of the smaller Pterodactyle (pl. 1, *tom. cit.* 1845) from those figured in plate 2. *tom. cit.* 1848, have received full confirmation by the valuable discovery of the portion of the cranium of the truly gigantic Pterodactyle, about to be described, to which they belonged; and it is certainly to be wished that, in determining to assign to Mrs. Smith's specimens the name of '*giganteus*,' Mr. Bowerbank should have conformed to the following equitable rule of the 'Committee of Nomenclature':—"The author who *first* describes and names a species, which forms the groundwork of later generalizations, possesses a higher claim to have his name recorded than he who afterwards defines a genus which is found to embrace that species. . . . . . . By giving the authority for the *specific* name in preference to all others, the inquirer is referred *directly* to the original description, habitat, &c. of the species, and is at the same time reminded of the date of its discovery." (Reports of the British Association, 1842, p. 120.)

Now the species which I originally described under the name of *Cimoliornis diomedeus* comes precisely under this category: it has formed the groundwork of later generalizations, which have led to its being embraced by another genus. In this case the Committee of Nomenclature, whilst determining that the specific name should be retained, recommend that the describer should "append to the original authority for the species, when not applying to the genus also, some distinctive mark, such as (*sp.*), implying an exclusive reference to the specific name." In conformity with the above recommendation, the gigantic species of Pterodactyle, of which parts have been described by Mr. Bowerbank, and parts previously by myself, would be entered into the Zoological Catalogues as follows:—

*Pterodactylus diomedeus*, Owen (sp.), Proceedings of the Zoological Society, January 1851.

*Cimoliornis diomedæus*, Ibid., British Fossil Mammals and Birds, p. 545, cuts 230, 231 (1843–1846).

*Osteornis diomedæus*, Gervais, Thèse sur les Oiseaux Fossiles, 8vo, p. 38 (1844).

*Pterodactylus giganteus*, Bowerbank, Quarterly Journal of the Geological Society, vol. iv. p. 10. pl. 2. figs. 1 & 4 (1848).

Leaving, however, the question of names, regarding which I have no personal feeling except that they should indicate their objects without ambiguity or obvious impropriety, I proceed to lay before the same Society to which Mr. Bowerbank has communicated his last interesting and important discovery, similar evidence of a third species of Pterodactyle from the chalk, intermediate in size between the species of which the jaws were figured as the *Pterodactylus giganteus* in 1845, and the truly gigantic species which he has named *Pterodactylus Cuvieri*.

The specimens, which consist of two portions of the upper jaw, form part of that gentleman's collection, and were in fact exhibited on the table, but unnoticed, at our last meeting, their true nature not having been recognised. The chief portion might well indeed be mistaken, at first sight, for a crushed portion of an ordinary long bone; and it was not until after a close comparison of several specimens of these rare and interesting remains of Pterodactyles, kindly confided to me by Mrs. Smith of Tonbridge Wells, Mr. Toulmin Smith of Highgate, Mr. Charles of Maidstone, and by Mr. Bowerbank himself, for description in my forthcoming 'Monograph on the Fossil Reptiles of the Chalk,' that I discovered them to be parts of a skull of an undescribed species of Pterodactyle.

In order to make this understood, it will be necessary to premise a few words on the Pterodactyles in general, and on some of the characters of the jaw of the *Pterodactylus Cuvieri* in particular.

The Order *Pterosauria* includes species of flying reptiles so modified in regard to the structure and proportions of the skull, the disposition of the teeth, and the development of the tail, as to be referable even according to the partial knowledge we now possess of this once extensive group, to different genera.

M. Von Meyer *e. g.* primarily divides the Order into—

A. *DIARTHRI,* with a two-jointed wing-finger.
Ex. *Pterodactylus* (*Ornithopterus*) *Lavateri.*

B. *TETRARTHRI,* with a four-jointed wing-finger.
Ex. All the other known species of the order.

These again are subdivided into—

1. *Dentirostres.* Jaws armed with teeth to their ends; a bony sclerotic ring; scapula and coracoid not confluent with one another *; a short moveable tail.
Ex. *Pterodactylus* proper.

2. *Subulirostres.* Jaws with their ends produced into an edentulous point, probably sheathed with bone; no bony sclerotic; scapula and coracoid confluent; a long and stiff tail.
Ex. *Pterodactylus* (*Ramphorhynchus*) *Gemmingi* †.

The extremity of the upper jaw of the *Pterodactylus Cuvieri* is sufficiently perfect to demonstrate that it had a pair of approximated alveoli close to its termination, and we may therefore refer it to the Dentirostral division.

In this division, however, there are species which present such different proportions of the beak, accompanied by differences in the relative extent of the dental series, as would without doubt lead to their allocation in distinct genera, were they the living or recent subjects of the modern Erpetologist. In the *Pterodactylus longirostris,* the first species discovered and made known by Collini in 1784 ‡, the jaws are of extreme length and tenuity, and the alveoli of the upper jaw do not extend so far back as the nostril. In the *Pterodactylus crassirostris,* Goldfuss §, on the other hand, the jaws are short, thick, and obtusely terminated, and the alveoli of the upper jaw reach as far back as the middle of the vacuity which intervenes between the nostril and the orbit, and which Goldfuss terms the 'cavitas intermedia.'

In the solid or imperforate part of the upper jaw anterior to the nostril, the *Pterodactylus longirostris* has twelve long, subcompressed teeth, followed by a few of smaller size: the same part of the jaw in the *Pt. crassirostris* has but six teeth, of which the first four are close together at the end of the jaw, and the first three shorter than the rest. The *cavitas intermedia* in *Pt. longirostris* is much smaller than the nostril; in the *Pt. crassirostris* it is larger than the nostril. Were these two species of dentirostral *Pterosauria* to be taken, as by the modern Erpetologist they assuredly would, to be types of two distinct genera, the name *Pterodactylus* should be retained for the longirostral species, as including the first-discovered specimen and type of the genus; and the crassirostral species should be grouped together under some other generic name.

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* The condition of the scapular arch in the *Pt. giganteus,* Bow., *Pt. conirostris* mihi, demonstrates the fallacy of this character.

† Palæontographia, Heft 1, 4to. 1846, p. 19.

‡ Acta Academiæ Theodoro-Palatinæ, V. p. 58, tab. 5.

§ Beiträge zur Kenntniss verschiedener Reptilien der Vorwelt, 4to. 1831, sec. 1. tab. 7, 8, 9.

The specimen of gigantic Pterodactyle described by Mr. Bowerbank at the last meeting of the Society consists of the solid anterior end, *i. e.* of the imperforate continuous bony walls, of a jaw, compressed and decreasing in depth, at first rapidly, then more gradually, to an obtusely-pointed extremity. As the symphysis of the lower jaw is long and the original joint obliterated, and its depth somewhat rapidly increases by the development of its lower and back part into a kind of ridge in some smaller Pterodactyles, the present specimen, so far as these characters go, might be referred to the lower jaw, and its relatively inferior depth to the upper jaw in the *Pt. conirostris* would seem to lead to that conclusion. But the present is plainly a species which has a longer and more slender snout in proportion to its size, and the convex curve formed by the alveolar border, slight as it is, decides it to be part of the upper jaw. The lower jaw, moreover, might be expected, by the analogy of the smaller Pterodactyles, to be flatter or less acute below the end of the symphysis.

The specimen of *Pt. Cuvieri* consists of the anterior extremity of the upper jaw, of seven inches in extent, without any trace of the nasal or any other natural perforation of its upper or lateral parietes, and corresponds with the parts marked *a*, *b*, in figs. 10 & 11. From the number of teeth contained in this part, the *Pt. Cuvieri* presents a much closer resemblance to the *Pt. longirostris* than to the *Pt. crassirostris*; and if the entire skull were restored according to the proportions of the *Pt. longirostris*, it would be twenty-eight inches in length.

But nature seems never to retain the same proportions in species that differ materially in bulk. The great *Diprotodon*, with the dental and cranial characters of a Kangaroo, does not retain the same length of hinder limbs as its living homologue; the laws of gravity forbid the saltatory mode of locomotion to a Herbivore of the bulk of a Rhinoceros; and accordingly, whilst the hind-legs are shortened the fore-limbs are lengthened, and both are made more robust in the *Diprotodon* than in the Kangaroo. The change of proportions of the limbs of the Sloths is equally striking in those extinct species which were too bulky to climb, *e. g.* the *Megatherium* and *Mylodon*. We may therefore infer, with a high degree of probability, when a longirostral Pterodactyle much surpassed in bulk the species so called 'par excellence,' that the same proportions were not maintained in the length of the jaws; and that the species to which the fine fragment belonged, far as it has exceeded our previous ideas of the bulk of a flying reptile, did not sustain and carry through the air a head of two feet four inches in length, or nearly double the size of that of the Pelican.

Although the fractured hinder part of the jaw of the *Pt. Cuvieri* shows no trace of the commencement of the wide nasal aperture, there is a plain indication that the jaws were less prolonged than in the *Pt.*

*longirostris*, in the more rapid increase of the vertical breadth of the jaw. Opposite the ninth tooth, *e.g.*, the depth of the jaw equals two-fifths of the length in advance of that tooth, whilst in the *Pt. longirostris* it is only two-sevenths. The contour of the upper border of the jaw in the *Pt. Cuvieri* differs from that in both the *Pt. longirostris*, *Pt. crassirostris*, and *Pt. Gemmingi*, in sinking more suddenly opposite the ninth, eighth and seventh teeth, than it does along the more advanced part of the jaw; a character which, while it affords a good specific distinction from any of those species, indicates the hinder parts of the head that are wanting in the present specimen to have been shorter and deeper than in the *Pt. longirostris*.

The first pair of alveoli almost meet at the anterior extremity of the jaw, and their outlet is directed obliquely forwards and downwards; the obtuse end of the premaxillary above these alveoli is about two lines across. The palate quickly expands to a width of three lines between the second alveoli, then to a width of four lines between the fourth alveoli, and more gradually, after the ninth alveoli, to a width of six lines between the eleventh alveoli: here the palate appears to have been slightly crushed; but in the rest of its extent it presents its natural form, being traversed longitudinally by a moderate median ridge, on each side of which it is slightly concave transversely. It is perforated by a few small irregular vascular foramina. There are no orifices on the inner side of the alveoli; the successional teeth emerge, as in the Crocodiles, from the old sockets, and not, as in certain Mammalia and Fishes, by foramina distinct from them. The second and third alveoli are the largest; the fourth, fifth and sixth the smallest, yet they are more than half the size of the foregoing, with which the rest are nearly equal. The outlets of the alveoli are elliptical, and they form prominences at the side of the jaw, or rather the jaw sinks gently in between the alveoli, and is continued into the bony palate without any ridge, the vertical wall bending round to form the horizontal plate. The greatest breadth of the under surface of the jaw, taken from the outside of the alveoli, varies only from seven lines across the third pair to nine lines across the eleventh pair of alveoli; and from the narrow base the sides of the jaw converge with a slight convexity outwards at the anterior half of the fragment, but are almost plane at the deeper posterior half, where they seem to have met at one acute superior ridge; indeed such a ridge is continued to within an inch of the fore part of the jaw, where the upper border becomes more obtuse.

The whole portion of the jaw appears to consist of one uninterrupted bone—the premaxillary; the delicate crust of osseous substance, as thin as paper, is traversed by many irregular cracks and fissures, but there is no recognizable suture marking off the limits of a maxillary or nasal bone. The bone offers to the naked eye a fine fibrous structure, so fine as to produce almost a silken aspect, the fibres or striæ being longitudinal, and impressed at intervals of from two to six lines by small vascular foramina.

Having premised so much with reference to the characters of the

*Pt. Cuvieri*, I proceed to the description of the distinct species, for which I propose the name of *Pterodactylus compressirostris*.

### PTERODACTYLUS COMPRESSIROSTRIS, Owen.

(Reptilia, Pl. V. figs. 1, 2 & 3.)

This species is represented by two portions of the upper jaw, obtained from the Middle Chalk of Kent, the hinder and larger of which includes the beginning of the external nostril (figs. 1 & 2, *n*). The depth of the jaw at this part is fourteen lines, whence it gradually decreases to a depth of ten lines at a distance of three inches in advance of this, indicating a jaw as long and slender as in the *Pt. longirostris*, supposing the same degree of convergence of the straight outlines of the upper and alveolar borders of the jaw to have been preserved to its anterior end: that this was actually the case is rendered most probable by the proportions of the smaller anterior part of the jaw (figs. 1′, 2′, 3′), obtained from the same pit, if not from the same block of chalk, and which, with a vertical depth of seven lines at its hinder part, decreases to one of six lines in an extent of one inch and a half in advance of that part. The sides of the jaw as they rise from the alveolar border incline a little outwards before they converge to meet at the upper border. This gives a very narrow ovoid section at the fore part of the larger fragment (fig. 2), the greatest diameter at its lower half being four lines, and the sides meeting above at a slightly obtuse ridge. This very gradually widens as the jaw recedes backwards, where the entireness of the walls of the smoothly convex upper part of the jaw proves that the narrowness of that part is not due to accidental crushing. Had that been the case, the thin parietes arching above from one side to the other would have been cracked. The only evidence of the compression to which the deep sides of the jaw have been subject is seen in the bending in of the wall above the alveoli, close to the upper ridge at the fore part of the fragment.

In an extent of alveolar border of three and a half inches there are eleven sockets, the anterior one on the right side retaining the fractured base of a tooth: the alveoli are separated by intervals of about one and a half times their own diameter; their outlets are elliptical, and indicate the compressed form of the teeth: they are about two lines in long diameter at the fore part of this fragment, but diminish as they are placed more backwards, the last two being developed beneath the external nostril. The bony palate is extremely narrow, and presents in the larger portion (fig. 3) a median smooth convex rising between two longitudinal channels, which are bounded externally by the inner wall of the alveolar border. There is no trace of a median suture in the longitudinal convexity. The breadth of the palate at the back part of the fragment is eight lines; at the fore part it has gradually contracted to less than three lines, but it is somewhat crushed here. The naso-palatine aperture, *p*, commences about half a line in advance of the external nostril, three inches behind the fore part of the larger portion (fig. 3) of the upper jaw; which exemplifies the characteristic extent of the imperforate bony palate formed by the long single premaxillary bone in the genus *Pterodactylus*. The fragment from the more advanced part of the jaw (fig. 3′) contains five pairs of alveoli in an extent of two inches, these alveoli being rather larger and closer together than in the hinder part of the jaw. Owing to the compression which the present portion has undergone, the orifices of the alveoli are turned outwards, the bony palate being pressed down between the two rows, and showing, as the probable result of this pressure, a median groove between two longitudinal convex ridges; but the bone is entire and imperforate.

The form of the upper jaw in the present remarkable species differs widely from that of the two previously known species from the chalk, in its much greater elongation and its greater narrowness; and from the *Pt. Cuvieri*, in the straight course of the upper border of the jaw, as it gradually converges towards the straight lower border in advancing to the anterior end of the jaw. The alveoli, and consequently the teeth, are relatively smaller in proportion to the depth of the jaw than in the *Pt. Cuvieri*, and are more numerous than in the *Pt. giganteus*; they are probably also more numerous than in the *Pt. Cuvieri*; although, as the whole extent of the jaw anterior to the nostril is not yet known in that species, it would be premature to express a decided opinion on that point. As we may reasonably calculate from the fragments preserved (Pl. II. figs. 1, 2, 3), that the jaw of the *Pt. compressirostris* extended seven inches in front of the nostril, it could not have contained less than twenty pairs of alveoli, according to the number and arrangement of those in the two portions preserved.

The osseous walls in both portions present the characteristic compactness and extreme thinness of the bones of the skull of the genus: the fine longitudinal striæ of the outer surface are more continuous than in the *Pt. Cuvieri*, in which they seem to be produced by a succession of fine vascular orifices produced into grooves. The conspicuous vascular orifices are almost all confined to the vicinity of the alveoli in the *Pt. compressirostris*. This species belongs, more decidedly than the *Pt. Cuvieri*, to the 'longirostral' section of the *Pterosauria*: whether it had an edentulous prolongation of the fore part of the upper and lower jaw remains to be proved.

In attempting to form a conception of the total length of the head of the very remarkable species of Pterodactyle represented by the portions of jaw above described, we should be more justified by their form in adopting the proportions of that of the *Pt. longirostris* than in the case of the *Pt. Cuvieri*: but allowing that the external nostril may have been of somewhat less extent than in the *Pt. longirostris*, we may still assign a length of from fourteen to sixteen inches to the skull of the Pterodactyle in question.

It could not have been anticipated that the first three portions of Pterodactylian skull—almost the only portions that have yet been discovered in the cretaceous formations—should have presented such well-marked distinctive characters, one from the other, as are described and illustrated in Mr. Bowerbank's Memoirs and in the present communication. Such, nevertheless, are the facts: and, however improbable it may appear, on the doctrine of chances, to those not conversant with the fixed relations of osteological and dental characters, that the three corresponding parts of three Pterodactyles for the first time discovered, should be appropriated to three distinct species, I have no other alternative, in obedience to the indications of nature, than to adopt such determination *.

## 2. DESCRIPTION OF TWO NEW GENERA AND SOME NEW SPECIES OF SCUTELLIDÆ AND ECHINOLAMPIDÆ IN THE COLLECTION OF THE BRITISH MUSEUM. BY JOHN EDWARD GRAY, ESQ., F.R.S., P.B.S. ETC.

The collection of the British Museum is extremely rich in species of recent *Echinoids*, and fortunate in possessing long series of different ages of several of the species.

Having been recently occupied in arranging and forming a catalogue of these animals, I transmitted to the 'Annals of Natural History' for February a description of several genera and species of *Spatangidæ*.

MM. Agassiz and Desor having recently published, in the Monograph of Echini and other papers on these animals, all the species of these two families then known to them, and as they had every facility for examining the British Museum specimens, the species now to be described are but few in number.

### Fam. 1. SCUTELLIDÆ.

### Genus ECHINANTHUS.

Among the species which have the base concave, of which *E. rosaceus* may be considered the type, are to be added—

1. ECHINANTHUS AUSTRALASIÆ.

Vent beneath, at a little distance from the edge; back very convex in the middle; upper margin rather flattened, with a slight concavity at the end of the ambulacra; under side flat near the margin, deeply concave in the middle; spines of the under side near mouth very fine.

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* The same criticism or objection may be offered to the conclusions in the text, as the following one, which was called forth by my determinations of the species of *Balænodon* found in the red crag. "The specimens exhibited by Prof. Henslow were only *eleven* in number; so that, without allowing anything for the circumstance of each whale having *two* tympanic bones, and the probability of some of the above being in *pairs*, we have the first twelve determinable cetaceous bones discovered in the red crag appropriated to no less than *five* species. I have no pretensions to call in question the decision of Prof. Owen upon osteological grounds, but I must own that I am disposed, upon the doctrine of chances, to consider it hardly probable that these determinations are accurate."—*Searles V. Wood*, Feb. 16, 1844, London Geol. Journal, p. 35. The *fifth* species is a gratuitous addition to the four described by me, the determinate characters of which have been confirmed by numerous additional discoveries. Mr. Wood should have remembered, before he attempted to discredit the determinations from anatomy, and to substitute the numerical test, that the second mammalian fossil from the oolite, although a lower jaw, like the first, was of a different species, and that of five subsequently discovered unequivocal mammalian remains from Stonesfield, *all* are parts of the lower jaw, whilst two of them demonstrate a *third* species. Very improbable this to him, on the doctrine of chances; but only showing, as Sir Charles Lyell has remarked, "the fragmentary manner in which the memorials of an ancient terrestrial fauna are handed down to us."

*Hab.* Australia; N.S.W., Brisbane Water.

2. ECHINANTHUS TESTUDINARIUS.

Vent beneath a little within the edge, depressed; back slightly raised, evenly convex; under surface rather concave from the edge.

*Hab.* Indian Ocean; Borneo.

3. ECHINANTHUS OBLONGUS.

Ovate-oblong, elongate, rounded at the end; sides thick, rounded; back depressed round the end of the ambulacra; crown rather convex; ambulacra ovate, lanceolate, broad, and closed at the end; under side concave nearly to the edge; ambulacral grooves indistinct; vent near the margin.

*Hab.* Philippines; Siquijor.

4. ECHINANTHUS PRODUCTUS.

Shell ovate, elongate, the hinder end produced and flattened, the edge rather thick, thinner behind; the ambulacral petal broad, the bands not quite united at the end; under side concave to the margin; vent near the margin.

*Hab.* —— ?

5. ECHINANTHUS COLEÆ.

Shell ovate, subpentagonal, depressed; margin thick, rounded; back depressed as far as the end of the ambulacra, and then rather convex in the middle, the under side concave nearly to the edge; ambulacral petal ovate lanceolate, closed at the end; vent near the margin.

*Hab.* Mauritius. Lady Mary Cole.

To those which have a flat base may be added—

6. ECHINANTHUS EXPLANATUS.

Depressed, much expanded, centre of the back rather convex; ambulacra occupying rather more than half the space between the vertex and margin, the lines of pores of the anterior pair and posterior odd one far apart at the end; cavity with thin concentric lines of short compressed columns near the margin; jaws depressed.

*Hab.* Mauritius?

### Genus ROTULA.

The British Museum series induces me to believe that *Rotula digitata* of Agassiz is not distinct from *R. Rumphii*, as M. Agassiz first considered it to be.

### Genus ECHINODISCUS.

I cannot find any permanent difference to distinguish *Lobophora bifissa* from *L. aurita*; they are found together in the same habitat in the Red Sea.

## Genus MELLITA.

The larger spines on the back of this, the former, and succeeding genus are short, equal in size, and furnished with a more or less spherical head.

The Museum series of specimens show a very gradual passage between the *Echini* which have been called *Mellita testudinaria* and *M. quinquefora* by Agassiz.

The species which have six slits on the disc are found on the coast of Tropical America, and others on the shores of the Red Sea; I believe they form two species, which appear to have been confounded under one name.

The American *Mellita hexapora* has only narrow linear bands of larger tubercles (bearing the larger spines) between the branched lines radiating from the mouth on the under surface, and these lines are very much branched.

*Mellita similis* and *M. lobata* of Agassiz, also from the West Indies; the first appears to be only a variety, and the latter a monstrosity of this species.

The Red Sea species I have named

### MELLITA ERYTHRÆA.

Shell depressed, with five ambulacra and one posterior interambulacral slit; inferior oral grooves branched, branches very slightly divided; the larger spines and tubercles in a broad band, occupying nearly the whole interambulacral space between the inferior oral grooves.

*Hab.* Red Sea. Sir J. Gardiner Wilkinson.

There is a new genus which has the edge of the disk perforated and the vent near the mouth, as in *Echinoglyphus*, but differs in the oral grooves being more simple and only branched near the edge, in the lanceolate form of the ambulacra, and in the square form of the tesseræ of the ambulacral zones beyond the tip of the ambulacra.

## Genus LEODIA.

Body depressed, with a posterior slit and five perforations between the end of the ambulacra and edge; the marginal ambulacral tesseræ squarish, like the interambulacral ones; ambulacra lanceolate, acute at the tip, the anterior one most narrow and longest; pores united by a groove; ovarial plate pentangular; ovarial pores three; oral grooves simple, slightly impressed, converging towards the margin in front of the ambulacral perforations; vent near the mouth, in front of the anal perforation, with a group of three or four larger spines between it and the mouth.

### 1. LEODIA RICHARDSONII.

Body suborbicular, slightly depressed, five-lobed, hinder edge transverse; ambulacra lanceolate, not reaching to the discal perforations;

discal perforations ovate, small, the anterior smaller, the hinder largest, with two pairs of rather large tesseræ between the ends of the ambulacra and the foramen, the upper pair subtrigonal; oral grooves simply forked near the edge.

*Hab.* West Indies.

The single specimen I have seen of this species was presented by Sir John Richardson. It is rather deformed and sinuous on the right side, the hinder lateral perforation being nearly obliterated on that side.

In *Echinoglyphus* the tesseræ of the ambulacral bands are broad and band-like between the ambulacra and the ambulacral slits.

### Genus ECHINOGLYPHUS, Van Phelsum. The ENCOPE of Agassiz.

The large Brazilian species of this genus appear to be very variable. The young specimens have large notches on the edge of the shell, and as the animal increases in size, the marginal edges of these notches more or less approximate together, and sometimes even become united, so as to transform the notch into a perforation. M. Agassiz on these variations has formed several species; but the Museum series, from the Brazils and other parts of the east coast of Tropical America, show that they are all mere variations of the species which Van Phelsum called *Echinoglyphus frondosus*, and Lamarck *Scutella emarginata*. I am induced to believe that *Scutella quinqueloba* of Eschscholtz, *Encope Valenciennesii*, *Encope subclausa*, *Encope oblonga*, and *Encope Michelini*, are only varieties of this species: they are all remarkable for the large size and longly-rayed star-like form of the madreporiform plate.

### Genus FIBULARIA.

The following species is peculiar as having an oblong, longitudinal vent.

1. FIBULARIA OBLONGA.

Shell ovate, elongate, ventricose; vent oblong, longitudinal, according to the axis of the shell.

*Hab.* N. Australia.

## Fam. 2. ECHINOLAMPIDÆ.

### Genus ECHINOLAMPAS.

The species of this genus may be divided into two sections, according to the form of the ambulacra.

*Echinolampas oviformis* and its allies have the porous bands of the anterior and other pair of ambulacra equal; the lower side of the shell flat; the mouth oblong, transverse, with (5) tubercles between the oral ambulacra.

The other species have the anterior porous band of the anterior pair of ambulacra shortest; under side rounded, convex; mouth oblong, transverse, large, marked with no tubercles, and only very rudimentary oral ambulacra.

1. ECHINOLAMPAS DEPRESSUS.

Ovate, depressed, subpentangular; back regularly convex.

*Hab.* ——?

### Genus MORTONIA.

Shell ovate, thin, rather produced in front, rounded behind, covered with small tubercles; vertex central, convex; internal cavity quite simple; ambulacra petaloid, narrow, open at the end; bands rather diverging; pores rather crowded, united by an oblong groove; beneath concave, especially near the mouth and vent; mouth rather large, roundish oblong, transverse, without any ambulacral star; vent large, transverse, oblong, in the middle of the space between the mouth and hinder edge; ovarial pores four; madreporiform plate small, central.

? Echinocyamus, sp., *Desmoulin.*

Mortonia, *Gray, Cat. Echinoida in Brit. Mus.*

This genus differs from *Echinocyamus* in the thinness of the shell, and especially in the ambulacra being larger, more perfect, and in the pores of the ambulacra being united in pairs by a cross groove. It differs from the fossil genus *Pygaulus* in the vent being inferior, intermediate between the mouth and edge, and transverse.

This genus is named after Dr. Morton, the historian of Northamptonshire, who first attempted to arrange the fossil *Echini* into generic groups.

MORTONIA AUSTRALIS.

Elliptical, depressed, rather acute in front, rounded behind, under side concave near the mouth and vent; vent large, oblong, transverse, in the centre between the mouth and hinder margin.

Fibularia australis, *Desm. Tab. Syn.* 240.

Echinocyamus australis, *Agassiz et Desor, l. c.* 140.

*Hab.* South Sea. Mallet.

## February 11, 1851.

William Yarrell, Esq., Vice-President, in the Chair.

The following papers were read:—

### 1. DESCRIPTION OF A NEW GENUS AND FAMILY OF CYCLOSAURIAN LIZARDS, FROM PARA. BY J. E. GRAY, ESQ., F.R.S., P.B.S.

(Reptilia, Pl. VI.)

This interesting Lizard has lately been purchased by the Museum, from a collection of Saurians recently made by Messrs. Wallace and Bates, during their excursion within a circuit of about 300 miles of Para.

It is exceedingly interesting as presenting an entirely new form, different in many particulars from any before observed; so much so, that I am induced to form for it a new family, to be placed near *Anadiadæ* and *Chervíolidæ*, which may be thus characterized:—

### 1. IPHISADÆ.

Scales of the back, belly, nape and throat smooth, broad, six-sided, transverse, forming a single series on each side of the tail, narrow, lanceolate, elongate, regularly keeled, in rings alternating with each other; head shielded; chin shielded; ear open, circular; femoral pores distinct.

### IPHISA.

Head depressed, shielded; anterior frontal single, broad, four-sided; posterior frontals two, small, subtrigonal; vertebral single, rather elongate; posterior vertebral two, small, five-sided; occipital three, larger, middle one narrow, longitudinal; superciliary shield 3–3, hinder smaller, anterior smallest; temple with small shields; labial shields moderate; rostral and mental broad; chin entirely shielded; anterior single, transverse, first pair very large, triangular, covering nearly the whole of the chin, second pair small, at the outer hinder angle of the former; nostrils lateral, in the lower edge of the nasal shield, between it and the labial shield; eyes large, lateral; eyelids scaly?; ears circular, open; nape, back, throat and belly covered with two series of broad, smooth scales; sides rounded, covered with three or four series of six-sided, smooth scales, placed in oblique series; chest with a collar of five scales, the central one elongate, triangular, the lateral ones four-sided, the outer pair very narrow; preanal shields three, the central one elongate, narrow, subtriangular; limbs short, weak, covered with broad smooth shields above, the hinder shield beneath; femoral pores 10–10, distinct, the series nearly united in front of the preanal plates; toes 5–5, unequal, the inner very short, the outer hinder separated from the other by a space like a thumb; tail elongate, cylindrical, tapering, covered above and below with whorls of narrow, elongate, regular, lanceolate, strongly keeled pointed scales, those of each series alternating with those that succeed and follow it.

1. IPHISA ELEGANS. (Reptilia, Pl. VI. fig. 3.)

Olive-brown black marbled; sides darker, white varied; chin and beneath yellowish white.

*Hab.* Para.

## 2. DESCRIPTIONS OF SOME NEW BIRDS IN THE MUSEUM OF THE EARL OF DERBY. BY DR. KAUP.

(Aves, Pl. XXXVI. XXXVII. XXXVIII.)

During my visit to London last year I had the honour to receive an invitation from the Earl of Derby, to visit his collection at Knowsley Hall, with permission to use the materials I might find there for the monography of *Muscicapidæ* on which I was engaged. Of that collection I had already formed very high expectations; but I was agreeably surprised by finding them all surpassed, so great is the richness of this noble collection. It contains more than 14,000 specimens of stuffed birds, besides skins, which are not yet numbered. What adds still greater interest to this collection is, that it contains a large number of the original specimens described by Latham and other English authors, of whose writings these specimens are the only explanation. To the pleasure of working in so rich a collection must be added the command of a colossal library, to which not one work of importance is wanting. All this, with the aviaries of magnificent living birds, from every zone of the world, must have the greatest charm for the naturalist, and make Knowsley Hall for him a perfect Eden, which once seen shall never be forgotten.

The new birds described here include only one portion of my researches, because I could not finish so many genera. The materials of the very rich family of *Muscicapidæ* are too extensive, for a complete elucidation during the limited period of my visit from a foreign country; I wish my descriptions therefore to be considered only as fragments.

The object of my visit to England was to collect materials for a complete monography of the *Muscicapidæ*; but notwithstanding the many favours I received, and the extreme liberality with which my labours were facilitated in every English collection, I must confess with sorrow that I shall never be able to make a complete whole (perfectly free from objection), with materials collected in different museums. A perfect arrangement can only be achieved by the study of the materials present together, so that at every moment a comparison may be made between any two or any number of the species.

Were it my good fortune to assemble the whole materials of one family in my rooms at Darmstadt, one winter only would be necessary to finish each family in such a manner as to satisfy the requirements of modern science.

Were any one museum willing to accord me the whole materials in its possession, it is probable that all the supplementary species not contained in that collection would be readily furnished by other museums, as the absence of a few species for a short period would be of little or no importance.

That we can only climb to the summit of our science by means of well-made monographies, there can be no possible doubt; and I attach a higher value to a monography constructed on philosophical principles, than to the best fauna of any single part of the world: for only by a strict comparison of the birds of the five parts of the globe can we know what is a family, a subfamily, genus, species and subspecies. Only in this way—a difficult way no doubt—can we learn the true harmony of nature; and thus shall we be filled with admiration, when we see that every species, genus, family or order represents a certain type, and must receive its place in a scheme of classification according to fixed laws, which man must discover, but over which he has no control.

This charm can never belong to merely descriptive ornithology, because even the best descriptions are only like mosaic stones, which, when placed without rules, or arranged according to false principles, give us only a scattered mass of heterogeneous materials, or a picture destitute of truth.

These claims I have urged over and over again in my dissertations, but hitherto without effect. When shall the time arrive when a catholic spirit shall guide the destinies of science, and lead onward to that triumph of true knowledge, in which every director of a museum, and every student of the works of nature, may take his part?

At present it is impossible that a naturalist can without help arrange the whole materials of one class in his museum. Our museums are little more than great exhibitions for the people, who look too often only to colour, instead of being stores of nature's treasures, ready to be communicated to every naturalist who has proved himself worthy of the name. Every museum ought to accord freely and liberally the wished-for materials, for this is the cheapest way in which a family can be properly named and accurately classed. The common excuse that the lent materials might come to harm, is little more than an excuse. Time and destructive insects will do the harm, without the slightest advantage to science.

### NISUS (seu ACCIPITER) CHIONOGASTER, Kaup.

*Diagnosis.*—Above dark blue grey, beneath pure white.

*Description.*—The male is less than the *Nis. fringillarius.* Above dark blue grey, the crown, lorum, and a stripe over the eye- and ear-cover feathers more approaching to black; ear-covering, cheek and crop with fine black quill lines; tail with three black bands and a broader band at the end, which is white bordered; the underside of the tail has the bands more silver-grey; the first tail-feather with five bands before the large end-band; the wings on the inner side with four bands before the large end-band. Before the emarginations the bands are grey, and after them whiter.

The larger female with a white eye-stripe, and broader black quill stripe on the crop; the cover feathers of the tibia with a fine rufous tint.

According to the ticket of M. de Lattre, the iris of the female is orange, and that of the male dark brown, like burnt sienna.

These two specimens were procured by M. de Lattre in Coban, in the year 1843.

*Dimensions in millimetres.*—

| | ♂ | ♀ |
|---|---|---|
| Head | 40 | 45 |
| Gape | 16 | 19 |
| Wings | 173 | 206 |
| Tail | 140 | 160 |
| Tibia | 47 | 56 |
| Middle toe without nail | 32 | 37 |

We possess several species in the genus *Nisus*, Cuv., seu *Accipiter* of the English authors. Most of these are very near to the common Sparrow-Hawk; and I think some of them, like the North American *fuscus* seu *velox*, the African *rufiventris*, the *madagascariensis*, and perhaps the *erythrocnemius* of G. Gray, are not true species, but that they are subspecies of the common European *Nisus fringillarius*, forming a group amongst themselves, and exhibiting by no means the decided differences apparent between *fringillarius* and *pileatus*, or *pileatus* and *tachiro*.

In the same near relation to the *chiquera* of Western Africa do I consider the true *chiquera*, Vaill. 30, from India; and this opinion I found on the following characteristics.

The West African *chiquera* has the body above darker cinereous, with very distinct narrow black lines, and the stripe beneath the eye, and the black stripe over the eye and ear-covers, are more distinct; the rufous head with darker fine stripes.

The Indian *chiquera* has the head without stripes; the body above lighter grey, with very few traces of black bands; and the black semicircle round the eye is shorter and not so complete.

But these slight differences will not justify us in considering the West African *chiquera* as a true species distinct from the Indian true *chiquera*; it is only a subspecies of the latter true species. As such we must make a distinction, and as such it must be accorded a place in the system. I think the best way is to give a description of the oldest known subspecies, and arrange all the other subspecies with different names, distinguished by the letters of the alphabet, *a*, *b*, *c*, &c., amongst the true species. In this way it would only be necessary to give a very short description of the subspecies, consisting of the few marks by which it differs from the old known subspecies. Until we have discovered all the species contained in one and the same subgenus, we can never say with certainty whether a given specimen represents a true species, or only a subspecies; I must therefore confess that in the following descriptions of the family *Muscicapidæ*, it is very probable that I have described as species some specimens which hereafter will be arranged as subspecies, when the whole species composing the subgenus are completely known.

One of the most interesting birds in the collection of Lord Derby is a little Falcon, belonging to the subfamily *Falconinæ*, which enabled me to correct the characters of the genus *Harpagus*.

The characters must be changed as follows:—Bill large, with two teeth, slender and indistinct, or strong and distinct; wings short, and in the proportions of the quills very like *Nisus* seu *Accipiter*; toes short, and the inner and outer toes of the same length.

The genus *Harpagus* must be divided into two subgenera.

The older subgenus *Harpagus* must be distinguished by the following characters:—Two strong and distinct teeth; the nostrils placed near the end of a soft membrane covering a large cavity; tibia with scales not divided.

Two species, *diodon* and *bidentatus*.

The other subgenus, in which this new species must be placed, must be characterized:—Two slender indistinct teeth; the nostrils round, very small, and bored in the nasal bones; the first wing-feathers with very distinct emarginations, the fourth the longest; tibia with whole and divided scales (fig. 3).

I give this subgenus the name of *Spiziapteryx*, and the species I have named

### HARPAGUS CIRCUMCINCTUS.

*Diag.*—Size of the Kestril, with white stripe over the eye, which encircles the whole head and is connected with a white collar; the tail-covers, above and beneath, white.

*Descr.*—Rufous ash-grey, beneath lighter, with dark brown shaft-stripes; the white stripe over the eye, and the collar black marginated; tibia-covers white; the arm and hand wings white at the roots, and like the stronger cover-feathers, with white spots and bands on the inner and outer webs; the first wing-feather without spots on the exterior web, and with fine white spots on the interior web; tail black-brown; beneath with white roots and three small white bands and an end band; the fifth without spots on the exterior web; the fourth with only traces; the third exhibits round white spots; and the two exterior feathers are white-banded. From this very irregular distribution of spots, the tail, seen from above, exhibits a very irregular drawing. Cere, naked eye region and feet yellow; nails dark brown.

I apprehend that this specimen, the only one in England, is not a very old bird. Lord Derby received this bird from Chili, by Mr. Bridges.

*Dimen.*—Head, 49; bill, from the cere, 16; from the gape, 22; height, 13; breadth, 20; over wing, 123; tip of the wing, 56; middle tail-feather, 148; outer tail-feather, 115; tarsus, 45; middle-toe, 26; nail, 11; outer-toe, 17½; nail, 10; inner-toe, 16; nail, 12; after-toe, 13; nail, 13.

### *A new species of the subgenus* SAUROPHAGUS, Swains.

In the little subgenus *Saurophagus*, Swains., we had, till now, only three species. These are, *lictor*, *sulphuratus*, and *flavus*. I received by Mr. Wollweber from Zacatecas in Mexico an only specimen of a fourth species; but I found in the collection of Lord Derby, and in the British Museum, a great number of the same species.

To this species I have given the name of *Derbyanus*, as a mark of my respect for that distinguished patron of ornithological science, the Earl of Derby, President of the Zoological Society.

All the species of this little subgenus have the same general colouring, and are distinguished only by very few characters taken from the colouring of the wings and from the dimensions. The young ones have, like the young birds of *Scaphorhynchus*, the bill shorter and bigger, and the head is black, without the beautiful crest of the old birds. The old birds have a white front, connected with a white band over the eyes and over the black ear-covers, and surrounding the black head, which in the middle is ornamented with a yellow crest; the chin and underpart of the neck white; breast, belly, under-wings and tail-covers yellow; back olive-coloured; wings and tail brown, with red margins.

Saurophagus lictor, Gray & Mitch. Genera of Birds, t. 62.

*Lanius lictor*, Licht.—*Saurophagus pusillus*, Swains.—*Swainsonii*, Gould.

*Diag.*—Only the margins of the outer webs of the wings rufous; wings 86 mm. long. It shows the finest bill, a more graduated tail, and the smallest dimensions.

*Hab.* Brazil, Para.

Saurophagus sulphuratus.

*Lanius*, Gmel.—*Tyrannus*, Vieill. Enl. 296.

*Diag.*—Only the margins of the outer webs of the wings rufous; wings 110–114 mm. long.

*Hab.* Amer. meridional.

Saurophagus flavus, Gray.

*Corvus*, Gmel.

*Diag.*—Only the margins of the outer webs of the wings rufous; wings 126–130 mm. long.

*Hab.* Brazil meridional. Bolivia.

Saurophagus Derbianus, Kaup. (Aves, Pl. XXXVI.)

*Diag.*—The wing-feathers from the second to the sixteenth have the whole outer webs on the greatest part of the length rufous; wings 128 mm. long.

*Hab.* Zacatecas, in Mexico.

*Comparison of the dimensions.*—

| | *Saur. lictor.* | *Saur. sulphuratus.* | *Saur. flavus.* | *Saur. Derbyanus.* |
|---|---|---|---|---|
| Head | 41 | 53–58 | 60–62 | 60 |
| Bill, from the forehead | 22 | 29–30 | 35 | 32 |
| —— from the gape | 26 | 32–36 | 40–42 | 38 |
| Wings | 86 | 110–114 | 130 | 128 |
| Tail | 74 | 82–86 | 100 | 92 |
| Tarsus | 16 | 25–27 | 28 | 29 |
| Middle-toe with the nail | — | 21 | 30 | 26 |

In these dimensions *Saurophagus Derbianus* is very near to *Saur. flavus.*

In what relation with the subgenus *Scaphorhynchus*, Pr. Max., this little subgenus *Saurophagus* is to be placed, I shall determine in my next monography, *Muscicapidæ.*

Of the subgenus *Scaphorhynchus*, Ch. Bonaparte, in his very useful Conspectus, has given five species:—*pitangua*, *flaviceps*, *atriceps*, *audax*, and *chrysocephalus*.

The species *flaviceps* and *atriceps* must go down, because *flaviceps*, Sw., is a female, and *atriceps* a young bird of *pitangua*; *audax* does not belong to this subgenus, and is to be placed in the neighbourhood of *rufinus*, Spix, and *circumcinctus*, Sw., which have the same bill and similar covering.

We have only two species, *pitangua* and *chrysocephalus*, Tchudi, in the section of *Scaphorhynchus.*

*Scaphorhynchus,* with its broad bill, shorter and feebler tarsi and toes, represents more the Swallow type, and must be placed in the second rank of his genus.

Before I finish I may allow myself the observation, that, till now, the whole family of *Muscicapidæ* has been in a condition of the greatest confusion, and that the greatest number of genera must go down, or must be considered as subgenera of some larger genera. As an example of the way in which this is to be effected, I give for instance the genus *Psaris,* into which I transplant three genera of the new authors.

### *Some remarks on the genus* PSARIS, Cuv.

The genus *Psaris,* which is synonymous with *Tityra,* Vieill., is a true genus, which cannot be considered as the only type of a subfamily, and which cannot be divided into several genera. It is an indivisible genus, which I have separated into some little subgenera only. I prefer, from well-known reasons, the name *Psaris.*

The characters of this genus are:—Thick, strong, slightly compressed bill, without strong bristle-feathers on the mouth gape; tarsi moderately high, with broad scales on the front; on the sides and behind with small scales. *The old males have the second hand wing-feather abnormously short and of an unusual formation.* The females and young birds have the wings regular.

The species of this large genus are limited to the southern parts of America.

#### *a.* Subgenus CHLOROPSARIS.

They have the bill and the feathered lorum of the *Pachyrhamphus,* but the wings are shorter and the tail more graduated. Size of a Sparrow, colouring more variegated and greenish on the back.

1. PSARIS CUVIERI, Swains. Spix, tab. 45. 2.
2. PS. ATRICAPILLUS. *Muscicapa,* Gmel. Enl. C. 871 ♂. 831 ♀.
3. PS. VERSICOLOR. *Vireo,* Hartlaub.

#### *b.* Subgenus PACHYRHAMPHUS, G. Gray.

The bill unicolor black, shorter than the head, not compressed on the sides; the bristle-feathers moderately long; the abnormous hand-feather like *Chloropsaris,* with broader inner webs and emarginated only on the tip; tail unicolor, very little graduated. Size of a *Lanius colurio.* The colouring is dark and not so variegated.

We can give by the diagnosis the colouring of the abnormous hand-feather of the males.

4. Ps. VALIDUS. *Lanius validus*, Licht.

The second hand wing-feather with a long white spot on the inner web, which reaches to the third part of its length.

5. Ps. NIGRESCENS. *Pach. nigrescens*, Cab.

The second hand wing-feather black, with white margin on the exterior web.

6. Ps. PECTORALIS. *Pach. pectoralis*, Swains.

The second hand wing-feather black, with white spot near the root, and fine white exterior margin.

7. Ps. AGLAIÆ. *Pach. Aglaiæ*, Lafr.

The second hand wing-feather with an oval white spot near the root, and without white exterior margin.

### *c.* Subgenus PSARIS.

The red and black bill on the anterior part more compressed, and like *Cassicus*, with broad root, surrounded by the frontal feathers; lorum and eye region naked; the bristle-feathers over the gape very indistinct; the second hand wing-feather extremely narrow, formed like a sword, without an emargination on the tip. The colouring is silver-grey, like *Lanius excubitor*, with more or less black head, face, wings and tail. Size of *Lanius excubitor*.

8. Ps. CAYANUS, Cuv.

The black colour covers the whole head, and extends to the tip of the ear-feathers; the bill two-thirds red-coloured; tail black, on the root only white or silver-grey; the wings 116–122, and the abnormous second hand-feather 40 mm. long.

9. Ps. BRASILIENSIS, Swains.

The black of the ear-feathers extends further than the black of the head; the bill one-third red-coloured; the inner webs of the wings white-bordered; the wings 129, and the abnormous second hand-feather 41 mm. long.

This species is probably a subspecies of *cayanus*.

10. Ps. SEMIFASCIATUS. *Pach. semifasciatus*, Spix, t. 442.

The black on the head covers only the front to the eye, and descends to the anterior ear-feathers round the eye to the chin; tail black, with a silver-grey or white band under the tail-covers, and a white band on the tip; the wings 127–134, and the abnormous second hand-feather 46 mm. long; it is on the exterior web black, and on the interior white.

The female with dirty brown head and a greyish brown back, with a tinge of red.

11. Ps. MAXIMUS, Kp.

In the collection of Lord Derby I found a young bird of very large dimensions, which does not belong to any of the preceding species. The bill is reddish on the root; the under parts are lighter than on the young *cayanus*; the stripes are more obsolete, and are reduced on the side as black shaft-stripes; shafts of the tail reddish brown; under tail and interior wing-covers white, without spots.

| | | *Ps. cayanus.* | *Ps. maximus.* |
|---|---|---|---|
| *Dimen.* | Head | 52 | 56 |
| | Gape | 35 | 35 |
| | Wing | 129 | 129 |
| | Tail | 70 | 73 |
| | Height of the bill | 11 | 13 |
| | Breadth | 12 | 13½ |

It would be very interesting to discover the old bird of this species.

### *d.* Subgenus Erator.

It unites the size, colouring and formation of the second hand-feather of the true *Psaris* with the bill and feathered lorum and eye region of the other subgenera.

This little subgenus, with its mixed characters, gives the clearest proof that *Psaris*, *Pachyrhamphus* and *Bathmidurus* cannot be considered as true genera.

12. Ps. inquisitor, Orb. *Lanius inquisitor*, Olf.

*Diag.*—Tail black.

*Descr.*—The male with black head and white ear-covers, connected with a white collar, which divides the black head from the silver-grey body; tail black, at the root white, which extends to the margins of the inner webs; end of the tail without white band; the second hand-feather on the inner web white.

The female (*Jardinii*, *erythrogenys*, *Selbyi*, and *Nattereri*, Sw.) with white front and rufous ear-covers.

13. Ps. Fraserii, Kaup. (Aves, Pl. XXXVII. XXXVIII.)

*Diag.*—Tail two-thirds white, with black white-bordered end.

*Descr.*—The head to the ear-covers black; ear-covers and under the posterior part of the eye white; the second hand wing-feather light ash-grey, with white root.

The dimensions of these two species are nearly the same:—head, 52; gape, 32; height of the bill, 10; breadth, 14–15; wing, 105–113; tail, 63–70.

I give to this very distinct species the name of a very able zoologist, who is going a second time to Western Africa. From this journey we may anticipate the greatest benefit to our science, and we wish Mr. Fraser the best success. For all his kind assistance in the collection of Lord Derby I give him my best thanks.

### *e.* Subgenus Bathmidurus, Cab.

They have the bill like *Chloropsaris*, *Pachyrhamphus* and *Erator*, but the tail in most of the species is more graduated. The colouring of it is black, with white or yellow end spots. Size of a Finch. The predominating colour of the males is black, white and grey.

In this little subgenus we have different type-species, about which the different subspecies arrange themselves. One of these is

Ps. MARGINATUS.

Head-feathers black, on the tip with steel-blue; wings black; shoulder-covers, wing-covers and arm-wings white marginated; tail graduated, black with broad white tip.

The female has all the margins and the under parts rufous yellow, the back greenish, and the head darker coloured.

*a.* Ps. MARGINATUS MINOR.

Lorum and a small line on the front whitish; ear-covers, back part of the neck, lower part of the back light grey; upper part of the back black; all the under parts white with grey tint; the abnormous second hand-feather white, on the exterior web on the root with a black spot, and from this spot till the end; along the shaft on the interior web a small long black stripe.

*b.* Ps. MARGINATUS MAJOR. *Bathmidurus major*, Cab.

Lorum and a small line on the front whitish; before the eye a black spot of bristle-feathers; the shoulder-covers all white; over-back black; the abnormous second hand-feather longer, white, with a small stripe along the shafts on both sides.

*c.* Ps. MARGINATUS TRISTIS, Kp.

Without a small white line on the front; lorum and the whole head black; the feathers on this part are more massive on the tip, and have more lustre; the shoulder-covers only on the tip white; the whole neck and upper part of the back black; lower part of the back, ear-covers and all the under parts dark grey, mixed with black; the tail has not so much white on the tip; the under side of the wings with smaller white margins; the second abnormous hand wing-feather on the inner web whitish with grey spots, on the outside black, with a grey margin on two-thirds of the upper part; the emargination on the tip very distinct.

Mus. Derb.

| *Comparison.*— | *Ps. marg. minor.* | *Ps. marg. major.* ♀ | ♂ | *Ps. marg. tristis.* |
|---|---|---|---|---|
| Head | 35 | 38 | 36 | 37 |
| From the gape to the tip of the bill | 18 | 19 | 19 | 20 |
| Wing | 65 | 84 | 73 | 75 |
| Tail | 50 | 64 | 56 | 62 |

A new species in the collection of Lord Derby and in the British Museum, forming a second type-species, I have called

Ps. PARINUS, Kaup.

Size of *Parus major*; head-feathers black, with a soft violet lustre, and not imitating the form of scales; lorum, ear-covers and all the under parts dirty white; the whole back and shoulder-covers grey; the little plumage of the wings black or grey, with whitish margins; hand-wings black, arm-wings dark grey, marginated with whitish yellow; the inner webs of the wings broadly marginated with whitish yellow; tail-feathers grey, along the shafts black and on the margin narrowly bordered with yellowish white; the second abnormous hand-feather with broader inner web black, with white margin from the emargination to the end, and with a large long white spot from the root to two-thirds of the feather.

The female rufous with darker head; wings black-brown, with predominating rufous yellow margins; belly and under tail-covers lighter-coloured.

This species comes from Para.

Very near to this species must be placed the *Psaris surinamus* (*Muscicapa*, Gmel.), which is characterized with the following diagnosis:—*Caudâ rotundatâ, apice albâ; corpore nigro, subtus albo.*

I have not hitherto seen this species, nor *Ps. niger variegatus* and *melanoleucus.*

Dimensions of *Ps. parinus*:—head, 34; gape, 17; wing, 68; tail, 49.

### Genus Setophaga, Swains.

This genus is one of the finest of the whole family of *Muscicapidæ.* It is found only in America. Only one species inhabits the northern part, namely the very distinct species, *Set. ruticilla,* with its yellow or red-banded wings and tail. The tail-feathers are pointed.

The greater part inhabit the southern parts. They form various little subgenera, distinguished by their very different colouring. One of these, and I think the most beautiful, is the little section to which the following species belong. They have much yellow on the head and under side; on the over parts dark cinereous.

#### Setophaga ruficoronata, Kp.

*Diag.*—With red head-spot; the first tail-feather all white.

*Descr.*—The hind ear-feathers black; front, lorum and eye-region yellow; the first tail-feather all white; the second white, with black spot on the outer web, and black margin on the inner web; under tail-covers black-spotted.

Mus. Derbyanum.

Very near to this species is

#### Set. ruficapilla, Cab.,

of which Bonaparte gives the diagnosis in the following manner:—*Fusco-plumbea, subtus omnino flava,* lateribus fuscis; *pileo castaneo, rectricibus extimis* apice *albis.* Guiana.

#### Set. leucomphomma, Kp.

*Diag.*—Lorum, eye-region and chin white.

*Descr.*—Ear-covers black, the yellow colour reaching only to the after part of the eye; tail and under tail-covers like *ruficoronata.*

*Hab.* Bogota. Mus. Derb.

SET. ORNATA, Boss.

*Diag.*—The whole head beautiful yellow.

*Descr.*—The head-feathers longer (10 mm.); the face and chin white; the anterior ear-feathers on the tip black, the hind ear-feathers all white; the first tail-feather all white, the second only on the basal inner web black; under tail-covers black-spotted.

*Hab.* Andes. Mus. Derb.

SET. FLAVEOLA, Lafr.

*Diag.*—The hind ear-feathers with black stripes.

*Descr.*—The face orange; the anterior ear-feathers black, the hind ear-feathers yellow, black-striped; under tail-covers white; the first to the third tail-feather with white shaft and shaft-spot, which is enlarged on the tip.

*Hab.* Columbia. Mus. Derb.

A third type-species is VULNERATA, Wagl.

The species belonging to this type-species have the breast and belly beautiful red.

They are natives of Mexico.

SET. VULNERATA, Wagl.

Above cinereous, with black front, throat and rufous spot on the head; first to third tail-feather with white spots on the tip.

SET. PICTA, Swains. Zool. Ill. t. 3. *tricolor*, Licht.

Above, throat and sides of the lower parts black; margins of the first hand-wing and the three least arm-wings white, like the cover-feathers of the wings; the first and second tail-feather nearly all white, the third white, with broad black margin on the inner web.

SET. MULTICOLOR, Bonap.

Black; front, small band over the wing-covers, belly and the tips of the tail-feathers white.

A fourth type-species is

SET. VERTICALIS, Lafr.

Cinereous, head rufous; breast and belly yellow; the first tail-feather three-fourths, the second half, and the third only on the tip white.

*Hab.* Bogota. Mus. Derb.

SET. FLAMMEA, Kp.

Breast and belly orange; the first to the third tail-feathers only on the tips white.

*Hab.* Guatimala. Mus. Derb.

SET. MELANOCEPHALA, Tchudi, p. 192. t. 12. 1.

A small line of the front, lorum, eye-region, like all the lower parts, yellow; the four exterior tail-feathers white.

*Hab.* Peru. Mus. Derb.

## Genus TYRANNULA, Swains.

The genus *Tyrannula*, as Prince Ch. Bonaparte has apprehended it, is too large, and the forty species must be divided into some natural genera and different subgenera.

The manner of arranging these species in geographical sections is very simple, but very often the wrongest way, although so very clear that it can be understood by everybody. It is true that some genera are limited to a certain part of the world; but there are also many genera which are composed of species from all parts of the world, or from different zones of the same part of the earth.

A very natural section is formed by the species which Bonaparte called "Ultimi Tyrannorum sive Tyrannularum primæ."

The bill of the length of the head; over the nostrils as high as broad; the back rounded off; the gape bristle-feathers of moderate length; the wings moderately long, reaching to the tail-cover feathers; the tip of the wing short; the first wing-feather as long as the eighth, third and fourth the longest; the long tail of the length of the body; the head unicolor, without yellow crest, but the feathers can be erected; above dirty olive, with darker-coloured head; gorge and over breast ash-grey; the belly yellowish; the margins of the wings and tail rufous.

1. TYR. COOPERI. *Muscicapa*, Nuttall.

With shorter wings than *mexicanus*, but with longer bill, like *crinita*; throat and over breast light grey, not so dark as *crinita*; the black stripe along the inner webs of the tail-feathers is broader, like *stolida*.

*Hab.* Northern America and Chili. Brit. Mus.

2. TYR. CRINITA. *Muscicapa*, Linn.; *irritabilis*, Vieill.

With longer wings; throat and over breast darker grey; all the wing-feathers, except the first, black-brown with rufous margins.

*Hab.* North America. In every museum.

3. TYR. GOSSII, Bonap.

With longer wings; the anterior part of the outer webs of the first and second hand-wing whole rufous; the head darker, and the ash-grey dark, like *crinita*.

*Hab.* Jamaica. Brit. Mus.

4. TYR. MEXICANA, Kaup.

With short wings; all the wing-feathers, except the first, with rufous margins; breast light ash-grey; above lighter.

Mr. Wollweber sent me this species, which I found also in the British Museum.

5. TYR. STOLIDA. *Myobius*, Gosse.

With short wings; the rufous margins on the wing-feathers very fine; the black stripe along the shafts of the inner webs of the tail-feathers reaching only to the middle of the feathers; the inner webs of the exterior tail-feathers with extinguished bands.

*Hab.* Jamaica. Brit. Mus.

*Comparison of the dimensions.*—

| | *Tyr. Cooperi.* | *Tyr. crinita.* | *Tyr. Gossii.* | *Tyr. mexicana.* | *Tyr. stolida.* |
|---|---|---|---|---|---|
| Head | 46 | 45 | 48 | 43 | 43 |
| Bill from the gape | 28 | 28 | 31 | 24 | 24 |
| Wing | 94 | 100–105 | 104 | 93 | 86 |
| Tail | 88 | 89–94 | 95 | 86–90 | 82 |
| Tarsus | 22 | 19 | 24 | 22 | 19 |

It is possible that all these species are subspecies of one or two type-species. This point, however, can only be determined by future researches.

### Genus TODIRHAMPHUS.

I found in the collection of Lord Derby two new species belonging to this genus.

TOD. PECTORALIS.

Green, with a white spot before the eye; throat and chin dark ash-grey; next this with white on the crop; breast light ash-grey; the inner margins of the wing-feathers and the inner wing-covers yellow; outer margins of the wing-feathers and tail olive; belly and sides white.

Head, 28; gape, 14; wing, 45; tail, 42; tarsus, 15 mm. long.

*Hab.* ? Mexico.

TOD. RUFICEPS.

With red head and dark ash-grey occipital feathers; next this an ash-grey collar; over part of the wings black, with two light yellow bands; wing- and tail-feathers with olive margins, which on the arm-wings are more white; lorum black; ear-covers brownish; chin and throat white, with brownish tint, and divided from the yellow under parts with a black striped band; the tibial feathers black.

Head, 26; gape, 13; wing, 46; tail, 36; tarsus, 17 mm. long.

*Hab.* ? Mexico.

### PHRYNORHAMPHUS, Kaup. *Smithornis*, Ch. Bonap.

The bill very broad, half as high as broad, with sharp culmen; the wings short; the first wing-feather long, nearly as long as the seventh, the second as long as the third and fourth; outer toe at the base connected with the middle toe.

I am strongly inclined to believe that this section does not possess the song-muscles.

PHRYNORHAMPHUS CAPENSIS. *Platyrhynchus capensis*, A. Sm.

*Descr.*—Upper mandible black, lower mandible yellow; front and lorum rufous yellow; head black; the bristle-feathers with white roots; ear-covers ash-grey, with whitish shafts and shaft-spots; back olive-grey, with black spots; the roots of all the feathers on the back pure white; wing-covers with rufous yellow margins, which form two small bands; lower parts white, on the sides tinted with brownish rufous, and with broad black shaft-spots; the middle of the throat, belly and under tail-covers white; tail black-brown, with olive margins.

Head, 40; gape, 22; height of the bill, 7; breadth, 12; wing, 72; tail, 55; tarsus, 18; middle toe, 15 mm. long.

Lord Derby's collection. Brit. Mus.

A communication was received from Dr. G. R. Bonyan, of British Guiana, on the Raptorial Birds of that country, of which the following is an abstract:—

## 3. NOTES ON THE RAPTORIAL BIRDS OF BRITISH GUIANA.

BY DR. G. R. BONYAN.

There are, I believe, only three species of Vulture in British Guiana. The first is the well-known

### KING OF THE VULTURES.

*Sarcorhamphus Papa* of Dumeril.—*Irubicha,* Azara.—*Vultur Papa,* Linn.—*Le Roi des Vautours,* Cuv.—*Carrion Crow Governor* of negroes.

There is a very good drawing of this bird in Latham's 'General History of Birds.' It is by no means common in Demerara, but young birds are occasionally brought from the upper rivers, particularly the upper parts of the Mahaica and Mahaicony creeks, where they abound, to the town. They are easily tamed and eat any sort of meat, not showing a particular predilection to putrid meat. Although I have seen this bird in its wild state, I have never witnessed it alighting upon a carcase; the common Carrion Crows, it is said, cede place until the king has fed. Mr. Waterton witnessed this singular fact, and I have heard it corroborated by more than one person of veracity. I know nothing of its habits or nidification. The colours about the head and neck are remarkably beautiful and varied, and have a downy bloom as it were, which it is impossible to imitate by painting the preserved specimen.

### The COMMON CARRION CROW. *Cathartes iota.*

If this bird be the same as "*Vultur iota*" of Charles Bonaparte, it is imperfectly described by Cuvier as having only the head naked; whereas it has the head and the neck more than half way down, naked, warty and black; nor is its plumage of a shining black, but dull and inky. The Carrion Crow is seen over the whole surface of the country, either soaring on dry sunny days at an immense height in the air, or swooping down in wide gyrations towards the ground. If a carcase be thrown out on a dam, no Carrion Crow being within the range of vision, after a short time one will be seen in a distant part of the horizon; presently another will appear; then another and another, until they will be observed coming from all quarters; not, however, in a direct line towards the object, but in more or less extensive gyrations. There can be no doubt that the first Carrion Crow that sees the object, by an increased energetic quickness of its flight, gives notice to those which are within its sphere of vision that there is game in view, which accounts satisfactorily enough for the vast number of these birds which are collected from every quarter of the horizon in so short a time after a dead body is exposed. Indeed, to the eye of the common observer, the difference of motion of a *Vultur iota* on the look-out, and after it has sighted its quarry, is very remarkable. The former is a slow, steady and gentle soar, in small gyrations, at an equal height; the head of the bird, if it be examined with a glass, being seen turning from side to side. The latter is a rapid and energetic advance, every hundred yards or so the speed being increased by several vigorous flaps of the wings. It appears to me to be quite unnecessary to enter into the discussion, as to whether this bird hunts by sight or scent, as it is quite sufficiently established that it is assisted by both senses. The instant a snake is killed, the Carrion Crow will, if in the neighbourhood, sight the object, and speedily descend and commence his attacks upon the dead animal. Or if a negro lets fall a calabash with eggs, and they are broken, the Carrion Crow will soon be seen feasting on the unwonted luxury. If, on the other hand, a body be imperfectly interred, this bird will, so soon as putrefaction has commenced, be seen in the neighbourhood perched upon a tree or tombstone, and apparently much puzzled to know where the piece of mortality can lie concealed which evolves the, to him, delicious fragrancy. If the body be that of a tough-skinned animal, such as an ox or horse, the Crows will wait, perched on trees in the neighbourbood, until putrefaction has softened it sufficiently for them to feed on it. Their bills and feet are remarkably weak. They build in very high trees nests of broken sticks. The eggs when broken have a semi-putrid odour. It is worthy of remark that the Carrion Crow is common about the streets of New Amsterdam, scarcely getting out of the way of the passengers; while in Georgetown, not more than sixty miles distance, this bird is never seen in the streets. The former town is said to be much more cleanly and well-kept than the latter.

### The YELLOW-NECKED CARRION CROW.

This bird is smaller and more slender than the common Carrion Crow. It is found principally about the creeks of Mahaica and Mahaicony. It is less numerous than the Black-headed Carrion Crow. It is not either so gregarious a feeder, and appears to search for smaller carcases, such as the putrid fish on the dried savannahs bordering the creeks. There is certainly, with the exception of the colour of the head and neck, the absence of warts, and the slender form of the body, but a very slight specific difference between this bird and the former. The colour is black, with blue and greenish iridescence.

The **Fishing-Hawk.** *Pandion.*

A very handsome little fishing Eagle. I do not think this is the same species as *Le Balbusard* of Cuvier. It enlivens very much the scene about the flat swampy lands of the sea-coast, when the trenches are full with the mixed tide and bush water. It hovers for a length of time in one spot at a considerable height, and then suddenly descends vertically on its finny prey, or it alters its position to another part of the trench. When it makes a capture it flies off to a neighbouring tree to devour it.

The **Large Blue Hawk of the Cataracts.**

This bird I shot with a single bullet while descending the long and swift rapid of Twansinki, lat. 5°, on the Essequibo. It is very rarely seen on the lower parts of the rivers. The manner of its death was as follows, as I find on referring to my journal of the trip:—10th November. An exciting day's journey in the descent of the rapids between Twansinki and Waraputa. Some of these we did not venture to *shoot*, as it is called, but had to let the boat down, by means of the tow-line, most ignominiously, stern foremost. We had, however, the satisfaction of being very nearly swamped in descending a long rapid in the lower Twansinki range, which made up somewhat for the slight we considered had been put upon our courage by our coxswain, Hermanus, refusing to shoot down those rapids he considered to be dangerous. Our indignation against the noble captain was considerably cooled. The great danger in the descent of these long rapids is from the boat being carried down by the rush of the torrent, and the bow being at the same time more or less submerged by the curling back of the water, when it meets the resistance of the rocks in its passage. Thus the descent, although very swift, is in a succession of violent plunges, at each of which the boat, if not built with a sufficient *spring* in the bow, which was unfortunately the case with us, takes in a large quantity of water, and is in great danger of being swamped before it reaches the foot of the rapid. Everything depends of course on the *way* the boat has on it, and our crew, on this occasion, urged by the frantic gestures and shouting of the steersman and bowman, pulled with amazing vigour and energy. In the very midst of the hurly-burly of this descent, a Large Blue Hawk flew rapidly across our bow and alighted on a high dry tree. My soul had long yearned after a "Blue Hawk" of the Cataracts. Before I could fairly cover it, the bird was eighty yards behind us. The report of the gun was scarcely audible in the tremendous noise, and the Hawk for a second remained immoveable and apparently unhurt, when his head sunk, his body swung forward, and the powerful grasp of his talons relaxing in death, he fell plumb down.

There are three species of *Ibycter*, or "Carracarra Hawks," as they are called by the creoles. These are very numerous on the banks of the rivers and creeks, and appear to be continually on the alert, flying from tree to tree, alighting and scratching on the sands, and indeed being the only specimens of the bird kind on the higher rivers which are always to be met with during the whole day. The first is

### The LAUGHING HAWK.

A well-known bird, which has been described by Waterton, Schomburgk and others. It is remarkably noisy, and is generally seen in company with three or four others of the same species flying about and perching on the high trees on the borders of creeks, uttering almost constantly a discordant loud gabbling, from whence it has got the name of the "Laughing Hawk." This bird feeds on eggs, young birds, insects, and does not despise certain sorts of fruit. It is, in fact, omnivorous.

### The YELLOW-HEADED CARRACARRA HAWK.

Smaller than the preceding. Three or four are generally seen together. They frequent chiefly in the months of September, October, and November, when the guana and river turtle lay their eggs, the extensive sand-banks on the river Essequibo, beyond the first rapids in latitude 6° 10′. I have seen them in companies of from three to five, assiduously scratching up the sand in which the guana or turtle had laid; and as these reptiles deposit their eggs at least eight inches beneath the surface, their rasorial powers are very considerable. The sands on this part of the Essequibo extend in every direction, lying on the beautiful bosom of the placid river, among finely wooded islands of all sizes, with most inviting sand beaches, enticing you to land at every turn. If you do land, you will probably see on the hard fine sand the scrambling track of a guana, which, if petrified, would set a palæontologist frantic with delight. Close by, the steadier and more decided footstep of the cayman, clearly showing that he is made of somewhat sterner stuff than his herbivorous friend, and still further off, a camoude has dragged his slow length along. There are tracks of turtle, ducks, snipes, lizards, and all sorts of *Copriæ*; in fact, a first-rate piece of interesting geology, only not baked or compressed yet. Edging the bank is the eternal forest.

### The RED-HEADED CARRACARRA.

This bird is of the same size as the preceding, but its habits are somewhat different, as its food appears to be principally confined to insects and small reptiles. I found the stomach of one I dissected full of fragments of beetles. Mr. Swainson places these birds at the head of the Kites, where they are certainly more naturally situated than among the Eagles, where they are placed by Cuvier.

The next birds are the Awl-beaked Fish-Hawks. I only know two, and they are very near one another.

### The LARGER AWL-BEAKED FISH-HAWK

Is remarkable for the great length of the curve of the upper mandible, and is somewhat larger than the next. Both are savannah birds, feeding on freshwater fish. They are often seen in large flocks, particularly on an extensive savannah, through a part of which is dug the freshwater canal called the "Lamaha," which was intended to supply the city of Georgetown with water. They prey particularly on the Hassar (*Callichthys*, Schomb.). This curious fish, which builds a nest in or under which it lays its eggs, is found in abundance in the small pools and water-holes of the savannahs. It is a very domestic fish. The female, when the time for spawning arrives, collects a number of small pieces of stick, and places them together, across one another; it then, descending beneath this structure, which is about a foot in diameter, exspumates a quantity of viscid matter, which, being mingled with air, causes the nest to float. In this viscid exspumation the eggs are laid, and both the male and female remain near the nest, making furious strokes at any intruder; and as they are provided with a very sharp bony first ray to the dorsal fin, if a wound be inflicted it is generally a severe one. The form of the beak of the Fish-Hawk is admirably adapted for separating the plates of mail in which the Hassar is enveloped. It is when the water in the pools and water-holes is reduced in the first part of the dry season to soft mud, that flocks of these birds are seen on the savannahs, feasting on Hassar.

The Smaller Awl-beaked Fish-Hawk.

Habits the same as the former. From the habits of this group of birds of scouring the savannahs in search of prey, the length of their wings, and the strength of their claws, they approach near to the Harriers.

The Scissors-tailed Kite. *Nauclerus furcatus.*

This is a very graceful bird, and is generally seen soaring, with widely-forked tail, above the lower parts of creeks, or over rivers when the water is fresh. They are, when perched, generally in companies of from five to six. They strike at small birds, creepers and such like, when feeding. I do not think that they strike at birds on the wing, and I never saw the *Nauclerus* pounce on a fish, although they appear to prefer to soar over the broad parts of creeks and fresh rivers. In fact, they are scarcely ever seen elsewhere. The Camouni creek, a few hours' sail up the Demerary river, is a favourite haunt of the Scissors-tail. Here they may be seen by the now rare traveller in this once thickly populated and very beautiful creek, either soaring high up in the brilliant sunshine, with a gentle undulatory motion, moving the head from side to side, and alternately opening and shutting the fork of the tail, whence their name of "Scissors-tail"; or perched in a small company upon some high creek-side tree, attracted probably by a flock of creepers or manakins. In coming down the Camouni one morning with a pleasant company of sportsmen—we had bivouacked near the source of the river the night before—I was much struck with the remarkable gracefulness and beauty of the *Nauclerus*. A company of six had selected a high tree close to the water's edge, at a wide and graceful bend. The approach of our boat alarmed them, and they flew up and around the tree as if inclined to settle again after we had passed on; but on one of our party firing, the birds, finding the danger impending, sought for safety in the higher regions of the atmosphere, and it was in their gyrations to obtain a suitable elevation that their gracefulness and beauty were particularly remarkable. I am not acquainted with any Hawk which soars to such a height as the *Nauclerus*. I have seen them over the river Pomeroon, at an elevation so great as to be scarcely visible.

The whole of the next group, nine in number, with the exception of three, are birds which frequent the extensive abandoned fields near the sea and the courida trees (*Avicenna nitida et tomentosa*), which form a narrow belt of vegetation along the coast, between the sea and the high roads. These fields, which were for the most part formerly in cotton, are often inundated, either from imperfect drainage of bush-water, or the incursion of the sea, which, since the British people commenced to make us pay the penalty of having had slaves, is fast resuming its ancient dominion, from whence it was dammed out by our Dutch predecessors. Over these fields may be seen hunting with indefatigable industry the first two of the group; viz.

The Brown-backed Harrier, and

The Long and Slender-legged Buzzard.

They search every bush, destroying old and young alike, snatch up the little grass-finches, and in fact are a most dreadful scourge to the feathered inhabitants of these woe-begone and miserable looking swamps, remembrances of our former glory and shame. The next is

The Chestnut Harrier.

A very rare bird, which was shot while flying over the Mahaica creek. Nothing whatever is known of its habits, but from its structure they must be similar to those of the two former.

The Large Sea-fishing Hawk.

The coasts of Demerara, it may not be unnecessary to inform the English reader, are bound by vast mud-flats, which at high tide are covered by the sea. At dead low tide the water-mark is, at many parts of the coast, not visible. It is on the courida trees which border the coast landward that the Large Sea-fisher may be seen waiting patiently for the influx of the tide, which brings with it his food. At about half-tide he begins to bestir himself, and as there is always an abundance of fish brought up by the water, he soon captures as much mullet and other such-like coast-fish as gratifies his hunger. The Sea-fisher fishes on the hover from a considerable height, pouncing down vertically on its prey. The next is

The Bird Hawk,

With striated chestnut belly, which does not hunt on the wing, but sights its prey, small birds, from the perch, generally a courida tree. It builds a nest of dry sticks upon these trees. The next is

The PARROT-BEAKED BUZZARD.

A rare bird, and was shot in a cocoa-nut tree in the Mahaicony. It sights its prey, small birds, from the perch. Another species,

The LONG-LEGGED SNAKE-EATER,

Leads us back to the abandoned fields. This bird, a large, brown, dirty and ruffianly-looking animal, is very often seen, particularly on the east sea-coast, undergoing the punishment peculiarly appropriated to bullies, namely, being severely thrashed by fellows much smaller than himself. The Kiskadee, a tyrant shrike, is the little champion who thrashes the Snake-eater. Sometimes two or three of these birds will be seen, always keeping above it, pecking the Hawk most unmercifully, and they seldom fail in bringing it to the ground, when the sight of its powerful talons I presume, reminding them that the better part of valour is discretion, causes them to fly off to some neighbouring tree and set up a glorious "Io Pæan" of Kiskadee, Kis-kis-kiskadee over their victory. I have seen this Hawk capture snakes more than once and fly off to its perch to devour the prey. Another species,

The CRAB-EATER,

Frequents the courida trees, from whence it sights its prey on the mud-flat, namely crabs. It pounces upon any unwary crab that quits its hole, and, unlike the Snake-eater, consumes it on the spot where it takes it, and then returns to its look-out. They build a nest of sticks in the courida bush. Another species,

The INSECT-EATER,

Is the most ignoble of all our Hawks. Its feet and claws are singularly weak, and it feeds almost exclusively on beetles and other insects, which it captures on the courida bush, which it frequents. I have opened them and taken a large quantity of the fragments of insects out of the stomach.

The CRESTED AND BOOTED EAGLE.

A live specimen of this beautiful bird was brought to me as a present by an old servant who had left me a long time, and had been living far up the Demerary river. He unfortunately knew nothing of its habits, and told me that it was the only one he had seen. I have never seen one in the wild state. This bird lived for some days, but would not eat. Apparently, the beautiful semicircular crest of black feathers with a white central star was only elevated when the bird was excited. This however was almost constantly the case, from extreme wildness. The cry was a loud, plaintive, diminishing ha-ha-ha-ha-ha-ha. This bird certainly has most of the characters of a true Eagle. It is heavy and robust, with a beak somewhat straight at base; tarsi plumed to the toes; wings moderately long, with the fourth feather the longest; and the general air is that of an Eagle.

There are only three Falcons that I have seen here; the first two true Falcons, with the typical characters and habits marked, and the third with all the typical characters (excepting the two-toothed beak) and the habits wanting. The first two are little Falcons, namely,

The CHESTNUT-BELLIED FALCON, and

The WHITE MOTTLE-BELLIED FALCON.

They are both birds that strike their prey on the wing, and are capable of killing birds nearly as large as themselves. The yellow-bellied species may be seen very busy at dusk, hunting bats with amazing swiftness. I have never been able to find either of their nests.

The TWO-TOOTHED BARIDI.

A bird with precisely similar habits to the next three birds. Like them, the Baridi never strikes, but confines himself to pillaging nests and destroying young birds. He is a sneaking marauder and burglar, and not audacious enough to commit highway robbery and murder, like the true Falcons. His wings are very short, and the characteristic formula of the quill-feathers is wanting. Consequently, I have placed this bird at the head of the succeeding group.

The PLAID-CHESTED SHORT-WINGED HAWK.

The BROWN-BACKED SHORT-WINGED HAWK.

The YELLOW-CERED SHORT-WINGED HAWK.

They are characterized by the same habits as the Baridi, stealing eggs and murdering unfledged birds.

The two next Hawks are large and powerful. The first is a large Black Hawk. It is a very fierce and destructive bird. It will kill rats and other small quadrupeds, as the Adouri (*Cavia agouti*), &c., and will strike at and kill so large a bird as a Currycurry (*Ibis rubra*). My huntsman Benjamin tells me that some time ago he shot a Currycurry, and before the bird fell to the ground, a large Black Hawk seized it and bore it away. It is very destructive to hen-roosts. The next species is found far up the river Demerary, and is by no means common. Mr. John King, a very respectable bird-stuffer and an observant naturalist, tells me that in a period of many years, constantly occupied in procuring species of birds and animals, he has only seen a few specimens of this bird. I have ascertained from the same authority, that its habits are very similar to the Large Black Hawk of the coasts.

I only know of five Owls in this country; of four I have procured specimens. The first two, Booted Owls without ears, are common enough, and I have not been able to ascertain anything in their habits differing from the well-known and frequently described habits of their European congeners.

The Small-booted Brown Owl.

This is seen frequently at dusk in company with the Little Bat-falcon, hunting bats. The larger one, or Large-booted Black and White Owl, is strictly a night bird, and found principally in the forests. The next two are likewise strictly night birds.

The Large Long-legged Strix, or Jumbi Bird,

Inhabits hollow cabbage-trees or old and dilapidated houses, unfortunately that style of habitation in Georgetown, and over the whole country, being at this time the rule, and not the exception. They make a great noise at night, a sort of clack, clack, clack, &c., terminating with a harsh, disagreeable and ominous scream. They are held here, as elsewhere, to be birds of ill omen, portending death, wherefore they are called "Jumbi," or Ghost Birds, by the negroes.

The Little Long-legged Strix

Is a very handsome little mouse-coloured Owl, which preys upon moths and other night insects as well as small bats. They are mostly seen on the savannahs and in the courida bushes, and are strictly nocturnal.

It will be perceived that I have not described the *Harpya destructor*. This is in consequence of my not having had an opportunity of examining a dead specimen; a living specimen which I have access to, in the possession of Governor Barkly, being altogether too fierce to take liberties with. It has a very owlish appearance, both in its facial disk and soft plumage. I have seen another imperfect skin of a very large Eagle feathered to the toes, with tremendous talons; both this and the Harpy I hope to be able to describe in a subsequent communication.

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### February 25, 1851.

R. H. Solly, Esq., F.R.S., in the Chair.

Mr. Gould directed the attention of the Meeting to two Hybrid Birds, concerning which he read the following letter, which had been addressed to Mr. B. Leadbeater, F.Z.S.

"Cottimore, Walton-on-Thames, December 17, 1850.

"Sir,—With reference to the bird which you now have of mine to preserve, I will tell you all which I have ascertained concerning it. It was shot at Henley Park, in the county of Surrey, by the keeper of H. Halsey, Esq., on a part of his property called the Peat Moor, and not far from the Frimley ridges; a wild tract of country, with a good many black-game upon it. The keeper was shooting pheasants for the supply of the house, and this bird rose on the opposite side of the hedge to that on which he was, on the outside of a large covert: he did not see it distinctly; but as in rising it made the sort of cry or crowing which a cock-pheasant is apt to do when disturbed, he shot it. I found it hung up in the larder, but was just in time to rescue it from the cook, and Mr. Halsey allowed me to take possession of it to be preserved. There is no doubt of its being a hybrid between the black-cock and hen-pheasant, as it appears that a black-cock has for the last two years frequented this particular covert and fed with the pheasants. The keeper, after feeding his pheasants, has frequently hid himself, to count his stock of those beautiful birds, and always saw this black-cock come to feed with them; and so it lasted for two years or more. I have no doubt that this bird is the produce of his intimacy with a hen-pheasant. The old black-cock used to play like a cock-turkey, the keeper tells me, dragging his wings, and could drive all the cock-pheasants, being completely master over them; which I wonder at, as the pheasant has spurs and he has none. The hybrid was shot on the 26th of October, and had he lived another month, would have been a beautiful bird. You will observe that he crowed on rising as a cock-pheasant does, which I believe a black-cock does not do. As far as I can ascertain in the number of instances of hybrids mentioned in Yarrell's 'British Birds,' they seem all to be the produce of cock-pheasants and grey-hens, whereas there is no doubt this is the reverse.

"I may mention while on this subject, that in another wood on Mr. Halsey's property two Hybrids were produced between the cock-pheasant and hen golden pheasant; this took place about thirteen years ago. A hen golden pheasant had escaped from confinement, and it was known that she was alive in the coverts; and in one particular wood it was remarked that the pheasants were always disturbed and driven out of it, and it was not known for some time by what; till at last, by watching at the feeding-places, it was discovered that this golden hen-pheasant and two other curious-looking birds were so pugnacious, that they drove every thing from the place. They were all three shot, when the other two proved to be cock-birds, and there is no doubt whatever of their parentage, both from their shape and plumage. They are small birds and not handsome, partaking of the plumage of both sorts of pheasants, without any of the beauty of either. I believe this to be the first instance on record of their ever breeding in a wild state; and you must remember that they were not in a Norfolk covert, full of half-tame pheasants, but in one of the wildest parts of England, as the presence of black-game will tell you. They were shot in the month of November, and therefore had probably got as good plumage as they ever would have. They are now in my possession through the kindness of Mr. Halsey.

"I think it a very curious circumstance that these birds should have been produced in a wild state, as I find in the 'Gardens and Menagerie of the Zoological Society,' vol. ii. Birds, under the head of Golden Pheasant, that in China, where the two sorts are wild, they have never been known to produce a mixed breed, and that in confinement it is sometimes obtained, but with the greatest difficulty. Also, in the 'Natural History of Ireland,' vol. ii. Birds, by W. Thompson, it is stated, as a reason for the Golden Pheasant not doing well in a wild state in this country if introduced where the common pheasant is now abundant, that they are such a shy, timid bird, and would be easily driven off by the other species. This fear is evidently groundless, as not only the half-bred birds, but the golden hen drove all the other pheasants, as was seen frequently by the keeper; and they were so cunning, and so well able to take care of themselves, that after it was known they were there, and the mischief they did, the covert was beat in the usual way for pheasants, in the hopes of being able to destroy these birds, but without meeting with them, and the keeper was obliged to watch for them and shoot them at feed.

"I remain, your obedient servant,
"John W. G. Spicer."

The following papers were also read:—

## 1. On the Anatomy of the Wart-Hog (*Phacochœrus Pallasii*, Van der Hoeven).

### By Prof. Owen, F.R.S., F.Z.S. etc.

The female *Phacochœrus* died, without previous symptoms of ailment, on Wednesday, February 5th, having lived in the Menagerie of the Society ten months, during which it throve, like the male, and grew rapidly; its weight at the time of its death was 105 lbs.

The length of the body from the extremity of the jaws to the root of the tail was 3 feet 6 inches; the length of the head 1 foot; that of the tail 1 foot: this part is naked, very slender, tapering towards the end, which is subcompressed, a little dilated, and ornamented with a tuft of long and slender black bristles, growing chiefly from the opposite margins, as in the Elephant. A layer of lard or fat adhered to the under surface of the corium, as in the Common Hog, preventing the movement of the skin by a panniculus carnosus.

The hair is of one kind, coarse, scanty, and moderately long; the bulb of each is imbedded in a flattened whitish body, about 3 lines broad. The cuticle is impressed by curved lines, giving it the appearance of being composed of imbricated scales from 3 to 4 lines in breadth. There is a strong callosity in front of each carpus, formed by, or connected with, the frequent habit of this animal of walking on its fore-knees. The suborbital wart-like appendage, situated 1½ inch below the eye, is composed of a mass of fibrous and adipose tissue. A double row of strong cilia project from the upper eyelid; but there are none on the lower lid. There is a broad 'membrana nictitans.' An arch of long black hairs forms an eyebrow. The upper lip is bent upwards, or folded over the base of the upper tusk, and many short hairs grow from the thickened margin of this fold. There is a slightly curved callous ridge of the integument, 5 inches in length, parallel with the middle of the lower border of the lower jaw. There are but four nipples, one pair abdominal, about an inch behind the umbilicus; the other pair inguinal.

The anus is situated about an inch below the base of the tail, is a transverse crescentic aperture, with a thick upper border. The vulva is situated about 10 lines below the anus; it is a little peaked below, and the clitoris, like a small caruncle, projects 4 lines within the margin.

There was no appearance of incisors in either jaw; but in the substance of the alveolar border of the lower jaw were four rudimental incisors, 9 lines long by 2 lines wide, which probably were never destined to come through, and are smaller than those in the Caffrarian Phacochœre, called 'Harruja,' in the British Museum. The present specimen also differed from that species in having no incisor in the upper jaw; not even the rudiment of one could be found in the substance of the premaxillary. Hence I conclude the species to be that which Van der Hoeven has characterized by the absence of incisors in both jaws, and has called *Phacochœrus Pallasii*. The exserted crown of the canine tusks was 2½ inches long in the upper, and 2 inches long in the lower jaw. Five molars were apparent on each side the upper jaw, and four molars on each side the lower jaw. The first in each jaw was a small, obtusely rounded premolar, with three long diverging fangs above and two below, answering to *p* 3; the second molar in the upper jaw was a much-worn milk-tooth, *m* 4; the third grinder above and the second below were the first true molar, *m* 1, with the crown worn down nearly to the roots. The fourth grinder above and the third below were the second true molar, *m* 2, with a body or crown 1⅓ of an inch in length before the giving off of the short bent fangs. The last tooth in both jaws was the anterior point of the third true molar just beginning to cut the gum*.

The absence of any incisors above the gum in this young animal, and the presence of four rudimental ones hidden in the lower jaw, just where they are occasionally found in old individuals of the *Phacochœrus Pallasii*, show that this hidden condition and small size are not due to age, but are specific characters.

The roof of the mouth presented about twenty-two pairs of transverse, arched, palatal ridges, with their convexities turned forwards; gradually decreasing as they were placed more backwards, and terminating opposite the end of the molar series; beyond this part the membrane of the palate was smooth and soft. The tongue is long and narrow, with small, obtuse, well-defined papillæ below its margins, with a smooth dorsum, beset with very fine gustatory papillæ for two-thirds of its extent. At the base of the tongue, 6 inches from the tip, are two large fossulate papillæ, on the same transverse line, and behind these the dorsum of the tongue is beset with numerous soft, moderately large, pointed and retroverted papillæ.

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* The grinding surface of the teeth in place closely corresponded with those of the *Phacochœrus Pallasii* figured in my Memoir on the Teeth of the Wart-Hogs (Philosophical Transactions, 1840, pl. 34. fig. 8, *m* 1, *m* 2 and *m* 3). The present specimen shows a stage anterior to the one there figured, the last milk-tooth intervening between the first molar and the small premolar in the upper jaw. There was no trace of the germ of a *p* 4 above the crown of *d* 4 in place, whence it may be concluded that, at corresponding phases of dentition, the *Phac. Pallasii* has fewer grinders than the *Phac. Æliani.*

Two mucous sacculi, about 1 inch in diameter and 1½ inch in depth, are produced from the upper and back part of the pharynx into the pterygoid fossæ, on each side the basisphenoid. Between the mouths of these sacculi there projects from the back part of the pharynx a glandular prominence or caruncle, about 7 lines long by 5 lines broad. At the lower and back part of the pharynx a third median sacculus is developed, just below the '*constrictores pharyngis*'; in this remarkable structure the Wart-Hog resembles the Babyrussa*. The œsophagus commences between this sacculus behind and two large post-arytenoid sacculi in front, and is divided from both by a transverse membranous ridge or wall. The long ligamentous crura of the epiglottis are continued from the sides and back part of the post-arytenoid sacculi to that cartilage, which is unusually distant from the larynx. The convex border of the broad epiglottis projects into the posterior nostril. The œsophagus descends behind the trachea to the thorax, and in the posterior mediastinum it is suspended by a fold of the pleura, about 1½ inch broad, which attaches the tube to the descending aorta, after it has passed through the arch.

The stomach is of small size and simple shape; its length in a straight line is 9 inches; following its greater curvature 1 foot 7 inches; the lesser curvature, or the distance from the cardia to the pylorus, being only 3 inches. The left end extends about 3½ inches beyond the cardia, and the right end projects about 2 inches to the right of the pylorus. It presents the usual form of the simple stomach, but the cardiac blind end is marked off by a slight constriction, hardly, however, to the same degree as in the Common Hog; and far from presenting the complexity of the stomach in the Babyrussa. The great omentum is continued from behind the great curvature, and was folded or crumpled up behind and beneath the stomach, enclosing the spleen, which was to the left and a little behind the great end of the stomach. No part of the omentum was visible when the abdominal cavity was exposed, and but little of the stomach could be seen. Almost the only viscera that presented themselves were the large spiral coils of the colon, closely united together by mesocolic bands laden with fat, about an inch in breadth. The cæcum was in the left lumbar region. The stomach extended from the left hypochondrium across the epigastric to the right hypochondriac regions. The liver extended from the right hypochondrium to the left, but did not cover all the great end of the stomach. The small intestines lay concealed behind the colon.

The œsophagus, which is 2 inches in circumference at its termination in the stomach, opens nearer the posterior than the anterior surface of the lesser curvature, 3½ inches from the left end, which forms a prominence above the concavity leading to it from the gullet.

The œsophageal epithelium is continued a little way on the inner surface of the stomach, forming a thin, narrow, oval patch, extending 1½ inch to the left of the cardia, ⅔rds of an inch to the right and back part of the cardia, and ⅓rd of an inch to the front of the cardia. The rest of the stomach is lined by the usual gastric vascular membrane, which in the distended state shows one or two short and very narrow, straight rugæ, and is smooth in the rest of its extent, except near the commencement of the short and narrow canal leading to the pylorus, where a number of longitudinal rugæ converge. The muscular coat of the stomach is 2 lines in thickness at the cardia, where its texture is unusually firm; it diminishes in thickness to 1 line after a course of 2 inches from the cardia, and is less than half a line thick over the great dilated portion of the stomach. It resumes its thickness of 2 lines at the narrow pyloric portion. A few longitudinal rugæ radiate from the cardia a little way upon the epithelial part, but there is no valvular apparatus there.

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* See Prof. Vrolik's excellent memoir on that animal, 'Recherches d'Anatomie comparée sur le Babyrussa,' 4to, p. 30, pl. 3.

The form of the pylorus is crescentic, bounded below by an arched protuberance, receiving in its concavity a single longitudinal protuberance from the upper side.

The bile-tube (*ductus choledochus*) opens on a mammillary eminence half an inch from the pylorus.

The duodenum, which is about 1 inch in diameter at its commencement, where it receives the ductus choledochus and pancreatic duct, contracts to a diameter of ⅔rds of an inch as it bends down in front of the right kidney, suspended by a narrow mesentery; it then crosses the first lumbar vertebra, and becomes attached to the back of the ascending colon; there it ascends a little way, bending obliquely round the colon, and becomes suspended, as jejunum, upon the proper mesentery. The jejunum and ilium lie in close coils suspended by the narrow mesentery, which is loaded with fat, terminating next the intestine in lobes which project as a free border on each side the junction of the mesentery to the gut. The mesenteric vessels pass straight through this fat, without forming anastomotic arches. The mesenteric glands are arranged in a semicircle about the root of the mesentery. The small intestines preserve a pretty uniform diameter until near the end of the ilium, which gradually contracts to a diameter of about half an inch. The length of the small intestine is from 18 to 20 feet, or about five times the length of the body; which is proportionally one-half the length of the small intestines of the domestic Hog. The ilium passes near its termination from the right to the left lumbar region, and ascends to terminate in the cæcum, to which it is attached by a duplicature of the peritoneum. The cæcum was situated in the advanced part of the left lumbar region. It was 3½ inches in length, and about 2½ in diameter, with an obtuse rounded end; its parietes were slightly puckered or sacculated on two longitudinal bands, about 4 lines in breadth, a third band commencing near the entry of the ilium; its circumference is 7 inches. It is divided by a constricted neck, 3½ inches in circumference and 1½ inch in length, from the colon, and this contracted part was sacculated only on one side, the other side being smooth, with a strong coat of longitudinal fibres external to the circular ones. At this part the ilium, cæcum and beginning of the colon are attached by a strong mesentery to the spine: the colon ascends in front of the left kidney to the great curvature of the stomach, and bends over to the right side in front of the epiploon, and descending describes a large spiral curve, then a second, third and fourth, progressively diminishing in extent; the last and innermost is folded upon itself, and repeats two spiral coils in the opposite direction, the extent of these increasing; and the gut, quitting the mass of closely connected coils, passes backwards, and bends round the root of the mesentery, adhering to that part and to the pancreas above, then descends in front of the duodenum, much diminished in size, and getting to the back of the lumbar region becomes the rectum, and is continued, tightly bound to the sacrum, behind the genital organs and bladder to the vent. The coils of the colon, which are the first viscera that present themselves, and conceal almost all the others in the abdomen, are attached to one another by bands of mesocolon of about an inch in breadth; and these were laden with lobes of fat. There were many small, dark-coloured glands at the root of the mesocolon, from which straight blood-vessels radiated in groups of from four to eight or ten. The colon, where it forms the first series of coils, is 10 inches in circumference, and is slightly sacculated on two longitudinal bands. The sacculi subside with a slight diminution of diameter in the returning coils.

The length of the 'large intestines' was 13 feet 6 inches, or nearly four times the length of the entire animal.

The mucous membrane of the small intestines is produced in the duodenum into four or five narrow longitudinal folds, which in the jejunum are six or seven in number, and are here or there connected together by oblique folds. Towards the middle of the jejunum these folds disappear, and then reappear at intervals progressively increasing; and in the ilium the mucous lining is even and simply villous. In the partial or interrupted extents of the plicated structure, the rugæ are more reticulate in their arrangement. The lining membrane of the colon was smooth and even, but gorged with blood, and varied in many parts from a deep vinous to an almost black colour. The lining membrane of the rectum was disposed in numerous fine longitudinal rugæ. The small intestines contained only mucus; the large intestines a dark fluid matter of the usual fæcal odour, with one or two masses of hard fæces, about the size and shape of a pullet's egg.

The liver weighed 2 lbs. 4 oz. i tconsisted of three principal lobes, viz. a right, middle and left; the right is the largest, and is partially subdivided at its free extremity, which is closely connected with the right supra-renal body and the summit of the right kidney. The middle lobe is bifid, a gall-bladder 4 inches long by 1½ inch broad being lodged in the cleft; a small 'lobulus Spigelii' projects near the neck of the gall-bladder. The left lobe of the liver terminates on the left side, about 3 inches from the cardiac end of the stomach. The hepatic duct joins the cystic after a course of an inch; the 'ductus communis' is about the same length, and has a width of 3 lines at its termination, which is at the upper part of the beginning of the duodenum.

The pancreas is a long flattened band, from an inch to an inch and a half in breadth, extending in two directions from the beginning of the duodenum, where its duct terminates. One portion follows the first part of the curvature of the duodenum to the extent of 6 inches; the other and chief part of the gland passes from the pylorus behind the stomach to the spleen, and is 7 inches in length.

The spleen is a long, flattened, ellipsoid body, about 11 inches in length and 2½ inches across its broadest part at the middle. It weighed 3 oz.

The kidneys together weighed 6½ oz.; they are not cleft or lobulated, and are situated symmetrically at the back of the hypochondria. The supra-renal bodies are of an elongate, subcylindrical shape.

The heart is a somewhat flattened cone, with a produced pointed apex formed by the left ventricle. The pericardium adheres to the sternum; it was covered with much fat. There is a large pleural sac between the pericardium and the diaphragm, which contains the azygous lobe of the lung, the long intra-thoracic inferior cava, the œsophagus and descending aorta.

The right lung is divided into three lobes and the 'lobulus azygos'; the left lung into two lobes, the upper and smaller lobe being slightly subdivided. The tracheal rings overlap each other behind. The thymus gland extended from the fore-part of the pericardium into the neck. The thyroid gland consists of one elongate, narrow lobe, concave where it is applied to the fore-part of the trachea, convex where it is covered by the 'sterno-thyroidei'; it is about 2 inches in length and 8 lines wide. The thyroid cartilage is of unusual length, shaped like the side or section of a vase, convex outwards at its lower half, and concave above, by the bending outwards of its broad upper margin; its length is 2½ inches, its breadth 1½ inch. The arytenoid cartilages are still more unusual in their conformation; they are very long, curved backwards, and confluent at their apices; on each side of this prolonged confluent point they are deeply cleft, so as to form two lateral pointed processes or appendages. A fold of membrane is continued from each lateral appendix outwards to the ligamentous crura of the epiglottis; these folds form the outer walls of two large post-arytenoid sacculi, which intervene between the larynx and pharynx. A median fold of membrane is continued backwards from the middle line and confluent apices of the arytenoids, and forms the septum between the post-arytenoid sacculi. The mucous membrane of the larynx is continued from the anterior and upper border of the thyroid forwards and upwards into the concavity of the basihyal, forming a wide but not very deep anterior sacculus.

The brain weighed 3½ oz.

*Female Organs.*—The ovarium, 9 lines long, 6 broad and 4 thick, is kidney-shaped, and is suspended by the middle of the concave border by a short, thick peduncle, to which is attached the commencement of the ostium abdominale of the oviduct; this orifice is not fimbriated, but has some delicate wrinkled processes on its inner surface. The peritoneal fold continued from this part to the end of the cornu uteri, and which approximates it thereto, forms one side of the opening of a wide ovarian pouch, upon the outer and fore-part of which the oviduct describes its convolutions in its course towards the uterus. The stroma ovarii contained at its periphery a few advancing ovisacs about a line in diameter.

Each cornu uteri is about 1 foot 4 inches in length, and of a nearly uniform circumference of 2 inches. It is beset with narrow, wrinkled, oblique, irregular rugæ, forming longitudinal elevations as they approach the body of the uterus, and again becoming oblique—patches of the rugous surfaces alternating with smooth patches.

The common uterus presents large, longitudinal, wrinkled rugæ for the first inch of its extent, and then a spiral valve begins to be formed, about 2 lines in thickness, which describes thirteen close coils before subsiding in the common vagina; the length of the spiral portion, which may be compared to the 'cervix uteri,' is 3½ inches; the length of the vagina is 4 inches. The rugæ of the vagina are longitudinal, and longer at its beginning and end, where they terminate on a well-defined circular fold, dividing the vagina from the urogenital canal, and constricting the orifice; the free borders of the spiral valve are beset by free, fine, longitudinal folds of the lining membrane of the uterus.

The urethra is about 3 inches in length, and becomes closely connected with the vagina 2 inches before it terminates. Its orifice is defended by two longitudinal folds.

In comparison with the Common Hog, the Wart-Hog, as regards its internal anatomy, differs in the more simple form of the stomach, the relatively shorter small intestines, and the relatively longer large ones; but, like the Common Hog, the cæcum is small, and the colon disposed in spiral coils, in both which characters they resemble the Ruminants; the cæcum is broader in proportion to its length than in the Common Hog. In both the Common Hog and Wart-Hog the intestinal canal is more tied down by the fat-laden processes of peritoneum, and appears to have less motion allowed it, than in other quadrupeds. The liver and gall-bladder, the kidneys and the thoracic viscera, much resemble those of the Common Hog. The inner surface of the jejunum shows a reticulate disposition of rugæ in the Common Hog, but not the regular longitudinal folds in the duodenum and beginning of the jejunum, as in the Wart-Hog.

The epiglottis passes into the posterior nares in both the Wart-Hog and Common Hog, and has the hyo-epiglottidei muscles; but the pharynx in the Common Hog does not present the superadded sacculi, nor the larynx those peculiarities which distinguish the Wart-Hogs. These resemble the Babyrussa in the sacculated structure of the pharynx, but differ in the more simple stomach. The Wart-Hog differs from the Common Hog in the smaller size and more simple form of the ovaria, and the fewer mammæ. The most marked difference from all other *Suidæ*, and that which best justifies the generic separation, is presented by the dentition of the *Phacochœrus*; the modifications of the alimentary canal are not of the same degree.

## 2. An Enumeration of species of recent Shells, received by W. J. Hamilton, Esq., from Borneo, in November 1850, with Descriptions of the new Species. By W. Metcalfe.

1. **Helix Brookei**, Adams and Reeve, Zoology of the Voyage of the Samarang, Mollusca, p. 60. pl. 15. fig. 4 *a*, *b*.

2. **Helix vittata**, Adams and Reeve, Zool. of the Samarang, Mollusca, p. 60. pl. 15. fig. 7 *a*, *b*, *c*.

This species, having been previously described by Mr. Benson, in the 'Magazine of Natural History,' under the name of *H. reglis*, ought to retain that name.

In addition to the variety figured in the Mollusca of the Samarang, Mr. Hamilton received two other varieties, in which the pale green bands are wanting, the brown colour more or less predominating, with bands of yellowish brown, and a brown circle surrounding the umbilicus.

3. **Helix Schumacheriana**, Pfeiffer.

4. **Helix resplendens**, Philippi in Zeitschr. f. Malak. 1846, p. 192.

5. **Helix nasuta**, nobis. *H. testâ subdiscoideâ, sinistrorsâ, carinatâ, angustè perforatâ, tenuissimâ, lineis incrementi et spiralibus confertis subtilissimè decussatâ, pellucidâ, hyalinâ; lineâ angustâ pallidè brunneâ ad carinam ornatâ; spirâ subconicâ; anfractibus* $5\frac{1}{2}$ *planulatis, ultimo acutissimè carinato, subtus nitescente; aperturâ subrhomboideâ, ad angulum exteriorem valdè productâ et coarctatâ; peristomate simplici, tenui, margine superiore vix reflexo, basali anticè reflexiore, umbilicum subtegente.*

Long. $1\frac{4}{10}$; lat. $1\frac{1}{10}$; alt. $\frac{5}{10}$ unc.

This elegant species is covered with a thin epidermis, of a pale straw colour, under which the shell is milky white. It bears some analogy to *H. Tayloriana* (Adams and Reeve, Zool. of the Samarang, Mollusca, pl. 15. fig. 2 *a*, *b*), but the projection at the extremity of the aperture is much more acute, and the shell is of a more gelatinous texture: it differs also in being sinistral.

6. **Helix glutinosa**, nobis. *H. testâ orbiculato-convexâ, angustè perforatâ, tenui, nitidissimâ, diaphanâ, pallidè brunneâ, carinatâ; supra carinam fuscâ, infraque lineâ angustâ flavescente, ornatâ; spirâ conoideâ, obtusâ; anfractibus 5 parum convexis; ad carinam supra infraque lineâ impressâ circulari, striisque numerosissimis transversis notatâ; peristomate simplici, acuto, margine columellari vix reflexo.*

Long. $1\frac{1}{10}$; lat. 1; alt. $\frac{6}{10}$ unc.

A bright shell, resembling a thin film of glue, with a keel of a darker shade; slightly indented above and below the keel, the indentation elegantly crossed with slight striæ, the effect of which, as well as the darker line, is partially visible throughout the sutures.

7. HELIX CONICOIDES, nobis. *H. testâ imperforatâ, trochiformi, acutè carinatâ, tenui, pellucidâ, luteo-corneâ; spiraliter leviter striatâ, striis ad suturam majoribus, confertioribus; apice mamillari; anfractibus 7, superioribus subconvexis, duobus ultimis planulatis, ultimo subtus convexo, nitido, ad carinam et in medio depresso; aperturâ trapeziformi, subtus arcuatâ; peristomate simplici, acuto, subtus flexuoso, marginibus callo tenui junctis.*
Long. $\frac{7}{10}$; lat. $\frac{6}{10}$; alt. $\frac{4}{10}$ unc.

8. BULIMUS CITRINUS, Bruguière; Reeve, Conch. Icon. Bul. pl. 31. fig. 187 *a*.

9. BULIMUS CHLORIS, Reeve, Conch. Icon. Bul. pl. 37. fig. 223.

10. CYCLOSTOMA BORNEENSIS, nobis. *C. testâ suborbiculari, depresso-conoideâ, acuminatâ, albidâ, fusco-variegatâ, maculis ad suturam, cinguloque infra medium fusco ornatâ; striis obliquis minutis, aliisque circularibus minutissimis impressâ; anfractibus quinque planiusculis, carinatis; ultimo magno, margine acutè carinato, circa umbilicum obtusè angulato; apertur âsubcirculari; peritremate albo, reflexo; supra productiore, subtus reflexo, ad columellam subsinuato; umbilico magno, profundo; operculo corneo, tenui.*
Long. $1\frac{6}{10}$; lat. $1\frac{3}{10}$; alt. $\frac{9}{10}$ unc.
*Varietas minor, magnitudine solum diversa.*
Shell bearing some characters in common with both *C. aquilum*, Sow., and *C. acutimarginatum*, Sow.; but having a more depressed spire, and flatter whorls than either of those species.

11. CYCLOSTOMA, apparently *C. parvum*, Sow. Thes. Conch. Cycl. fig. 254, 255.

12. CYCLOSTOMA UNDATUM, nobis. *C. testâ globoso-pyramidali, tenui, pellucidâ, albâ, lineis hyalinis undatis decurrentibus ornatâ, tenuiter striatâ; anfractibus* 6, *parum rotundatis, primis conicis regulariter crescentibus; ultimo magno, obtusè carinato; aperturâ circulari, supernè angulatâ; peritremate lato, expanso, vix nisi ad columellam reflexo; suturis mediocribus; umbilico parvo.*
Long. $\frac{6}{10}$; lat. $\frac{5}{10}$; alt. $\frac{6}{10}$ unc.
This species belongs to the division of the genus of which *C. læve*, Gray, may be considered the type.

13. CYCLOSTOMA TENUILABIATUM, nobis. *C. testâ discoideâ, spirâ depressâ, planâ, colore pallido, supernè castaneo-maculatâ et undulatâ; epidermide luteo-castaneâ, indutâ; anfractibus* 5 *rotundatis,* 4 *primis lævibus, ultimo lineis impressis irregularibus ruguloso; suturâ impressâ; aperturâ circulari; peritremate duplici; interno simplici, supernè emarginato; ex-*

*terno tenui, lato, planiusculo, supra ascendente, fornicato, dein compresso; umbilico patulo; anfractibus intus distinctis.*

Long. $1\frac{1}{10}$; lat. $\frac{8}{10}$; alt. $\frac{3}{10}$ unc.

Belonging to the genus *Pterocyclos* of Benson.

14. Cyclostoma biciliatum. *Pterocyclos biciliatum*, Mousson, Land- und Süss. Moll. von Java, p. 49. t. 20. fig. 9.

Several individuals of this species having been received, its locality is thus fixed. It is observable that the complete shell, which was not known to Mousson, exhibits a tubular spiracle near the aperture, similar to that apparent in *C. spiraculum*, Sow.; also, that the aperture is circular, depressed, with the peritreme white, expanded, slightly reflected, and at the upper part faintly undulated.

15. Scarabus plicatus, Fer. *var. major.*

This variety, in place of the usual purple colour of the shell, exhibits a deep yellow ground, with four broad bands of dark brown colour.

16. Scarabus Borneensis, A. Adams.

17. Auricula subnodosa, nobis. *A. testâ ovato-oblongâ, crassâ, albâ, epidermide castaneo-fuscâ, infra suturas decussatim granosâ, medio lævi, ad basim striis decussatâ; anfractibus convexiusculis, suturis distinctis, subcrenulatis; anfractu ultimo supernè longitudinaliter plicato-subnodoso; aperturâ medio paululum angustatâ; columellâ biplicatâ.*

Long. $2\frac{4}{10}$; lat. $1\frac{3}{10}$ unc.

A species distinguishable from *A. Midæ* by the convexity of the upper whorls and the smoothness of their lower halves, the depth of the sutures, and the longitudinal nodulous folds which surround the upper part of the final whorl: the aperture is also proportionally wider than in *A. Midæ*. In the single specimen received, the columellar lip has an interior protuberance above the upper fold.

18. Auricula polita, nobis. *A. testâ ovato-oblongâ, basi angustiore, spirâ brevi; epidermide castaneo-fuscâ, nitidâ; striis numerosis minutissimè granulosis circumdatâ, granis superius distinctioribus; aperturâ medio coarctatâ; columellâ triplicatâ, plicâ infimâ lineari.*

Long. $1\frac{6}{10}$; lat. $\frac{8}{10}$ unc.

Although the characters of the aperture resemble those of *A. Judæ*, the form of the shell differs entirely in its greater breadth, and in the shortness of the spire.

19. Auricula felis, Lam.

20. Auricula mustelina, Desh.

21. Neritina crepidularia, Lam. Conch. Ill. fig. 25.

22. Neritina Beckii, Reclus, Thes. Conch. fig. 13.

23. Neritina piperina, Chemn. Thes. Conch. fig. 166, 167.

24. NERITINA DUBIA, Chemn. Thes. Conch. fig. 81–88.

25. MELANIA CIRCUMSTRIATA, nobis. *M. testâ elongatâ, turritâ, solidâ, fusco-viridi; anfractibus convexiusculis, infra suturam paululum constrictis; superioribus striis* 6 *transversis elevatis, plicisque* 8 *majoribus longitudinalibus ornatis; ultimo striis* 13*; aperturâ ovali-oblongâ, basi dilatatâ, superius acutè angulatâ, et ferè rimatâ, intus albidâ; peritremate sinuato, columellâ callosâ.*

Long. $2\frac{6}{10}$; lat. $\frac{8}{10}$ unc.

26. MELANIA SUBSUTURALIS, nobis. *M. testâ turritâ, fusco-viridi, lineis castaneis longitudinalibus obliquis variegatâ; anfractibus ferè planis, quorum superiores striis elevatis perpaucis validis, inferiores pluribus minoribus inæqualibus ornati; ultimo ad basim crebristriato; suturâ distinctâ, excavatâ; aperturâ ovali, supernè angulatâ, intus albido-cærulescente; peritremate acuto, sinuato, extus effuso.*

Long. $1\frac{4}{10}$; lat. $\frac{5}{10}$ unc.

27. PALUDINA HAMILTONI, nobis. *P. testâ ovato-conicâ, tenui, perforatâ, viridi, concolore; striis transversis undulatis, aliisque longitudinalibus tenuissimè decussatâ; anfractibus* 5 *rotundatis, superioribus ætate erosis; suturâ impressâ; aperturâ ovali, supra angulatâ, intus cærulescente, margine paululum incrassato, albido; peristomate acuto, lineâ tenui nigrâ circumdato.*

Long. $\frac{9}{10}$; lat. $\frac{6}{10}$ unc.

The Bornean specimens being scarcely adult, the description is drawn up from individuals in my cabinet, which have long been there without any locality assigned.—W. M.

28. LITTORINA SCABRA. *Helix sc.*, Linn.

29. LITTORINA MELANOSTOMA, Gray, Zool. of Beechey's Voy.

30. LITTORINA ALBICANS, nobis. *L. testâ ovato-oblongâ, acuminatâ, tenui, albidâ, apice lævi, nitente; anfractibus* 7 *vel* 8, *quorum* 5 *ultimi striis numerosis paulatim crescentibus ornati; ultimus rotundatus, ætate varicosus, striâ unicâ majore, quasi carinatus, striis ad basim minoribus circumdatus; aperturâ rotundato-lunari, lacteâ; peristomate subreflexo.*

Long. $\frac{7}{10}$; lat. $\frac{4}{10}$ unc.

A delicate species, of a milk-white hue, the older specimens having many varices produced by the previous reflexions of the outer lip.

31. CERITHIUM OBTUSUM, Lam.; Zool. of the Samarang, Moll. pl. 13. fig. 3.

32. CERITHIUM UNICARINATUM, nobis. *C. testâ turritâ, tenui, apice truncato, hinc inde varicosâ, cinereâ, longitudinaliter plicatâ, interstitiis longitudinaliter striato-rugosis; suturâ parum impressâ; anfractibus vix rotundatis, regulariter crescentibus; ultimo acutè carinato, infra carinam crebristriato; aperturâ*

*mediocri subfuscá; columellá rectá; peritremate modicè reflexo, albescente.*

Long. $1\frac{6}{10}$; lat. $\frac{5}{10}$ unc.

33. Ampullaria, probably *A. Celebensis*, Quoy, Voy. de l'Astr. pl. 57. fig. 1–4.

34. Natica maculosa, Lam. *pellis-tigrina*, Chem.

35. Novaculina olivacea, nobis. *N. testá oblongá, valdè inæquilaterali, epidermide olivaceá, ad extremitates fuscescente, indutá; natibus erosis; anterius rotundatá, posterius angulato-rotundatá; margine superiore ferè recto, posticè paululum descendente, ventrali medio subcompresso; intus albá, dentibus lamellatis duobus recurvatis in utráque valvá, posteriore bifido.*

Long. $\frac{9}{10}$; lat. $3\frac{3}{10}$ unc.

A large example of this species, in the Collection of H. Cuming, Esq., exhibits a character which will probably be found generic; namely, a shelly protuberance in each valve, attached to the interior ligament at nearly its hinder extremity. These shelly substances have not, that I am aware, hitherto been noticed. It is probable that they become detached in most specimens by the removal of the animal.

36. Cyrena triangularis, nobis. *C. testá trigoná, solidiusculá, epidermide fusco-virescente, transversim striatá, striis marginalibus lateralibusque eminentioribus, sulco ab umbone ad marginem posteriorem leviter impressá; margine antico descendente, vix excavato, angulo anteriore rotundato; margine superiore subrotundato, posticè ferè biangulato, propter sulcum dorsalem subsinuato; intus lacteá, margine continuo nitentiore; dentibus cardinalibus in utráque valvá tribus, duobus bifidis; dentibus lateralibus brevibus, tenuissimè rugosis, haud striatis.*

Long. 3; lat. $3\frac{1}{10}$; alt. $1\frac{8}{10}$ unc.

The characters of this shell bear some resemblance to *C. Sumatrensis*, Sow. Gen.; but on comparison with the type of that species, now in the Cabinet of Sylvanus Hanley, Esq., the present is found to differ materially, in its triangular outline, as well as in the characteristic furrow from the umbo to the posterior margin, affecting the curvature of the posterior angle, and producing a slight sinuosity in the margin.

37. Unio.

38. Unio.

I am unwilling to describe as new these two species of the genus *Unio*, from want of acquaintance with the great American collections of the genus.

Although no letter accompanied this box of shells, Mr. Hamilton presumes that they have been sent to him by his friend Sir J. Brooke, Rajah of Sarawak. The remittance is undoubtedly from Borneo.

March 11, 1851.

J. E. Gray, Esq., F.R.S., in the Chair.

The following papers were read:—

## 1. A FEW WORDS ON THE SYNONYMY OF DISTICHOCERA, A GENUS OF LONGICORN COLEOPTERA FROM NEW HOLLAND, WITH CHARACTERS OF THREE SPECIES SUPPOSED TO BE UNDESCRIBED. BY EDWARD NEWMAN, F.L.S. ETC.

(Annulosa, Pl. XX.)

Among the invaluable labours of the late Mr. Kirby, none are more useful to the general entomologist than his lucid and masterly descriptions of new and remarkable forms of exotic Coleoptera; and of these, none afford to myself so much instruction and pleasure as that entitled "A Description of several New Insects collected in New Holland by Robert Brown, Esq.," and published in the twelfth volume of the 'Linnean Transactions.' In this admirable paper is the first description I can find of the extraordinary genus *Distichocera,* although, as Mr. Kirby himself informs us, it was known long previously under the same name, and although he himself gives it as "*Distichocera* of MacLeay," a name which I am inclined to conclude existed in manuscript only. Concerning the genus in question I lay no claim to any additional knowledge of the structure, habits or affinities of the insect described by Mr. Kirby; but the labours of collectors, amid the seemingly inexhaustible riches of our Australian colonies, have placed within my reach a greater number and greater variety of specimens. Mr. Kirby has only made us acquainted with a single species, and a single sex of that species. Mr. MacLeay has added a second, which has also been described by Guérin, Boisduval and myself under a variety of names. Three other forms of the genus have occurred to me, making the number five in all. Of these, three are certainly females, and two as certainly males. The object of this communication is to express my views as to associating the sexes, and to make known two supposed species which were previously uncharacterized.

### Genus DISTICHOCERA, MacLeay (MSS.?).

*Distichocera,* Kirby, Trans. Linn. Soc. xii. 471.

"Labrum transversum, tetragonum. Labium membranaceum apice bilobum: lobis divaricatis. Mandibulæ trigonæ, edentulæ apice incurvæ acutæ. Maxillæ basi trigonæ, apertæ. Palpi filiformes. Mentum transversum, trapeziforme. Antennæ sensim crassiores, disticho-ramosæ."—*Kirby, l. c.*

1. DISTICHOCERA MACULICOLLIS.

Mas. *Distichocera maculicollis,* Kirby, l. c.
*Distichocera maculicollis,* Audinet Serville, Ann. Ent. Soc. Fr. iii. 59.

*Distichocera maculicollis*, Boisduval, Faune de l'Océanie.

"Corpus fere cuneiforme, subtus pilis argenteis nitidum, supra nigrum, obscurum. Caput subcordatum, pilosum, canaliculatum utrinque ante antennas carinatum. Oculi brunnei. Antennæ breviores, nigræ: articulis omnibus apice biramosis (duobus primis brevissime); ramis oppositis compressis vertice rotundatis sinistris paulo longioribus, articulo extimo simplici clavato. Thorax subcylindricus: maculis quatuor dorsalibus quadratim ordinatis. Elytra cuneiformia: lineis tribus longitudinalibus elevatis: striga apud scutellum et alia majori in medio apud suturam piloso-argenteis, apice truncata. Femora brunnea. Tibiæ bicalcaratæ. Alæ elytris longiores."—*Kirby, l. c.*

Fem. *Distichocera rubripennis*, MacLeay, App. King's Voyage.

"Rufo-testacea subtomentosa, capitis lateribus oreque nigris, vertice canaliculato, antennis nigris, articulis vix biramosis, ramis sinistris brevissimis; thorace atro, vittâ utrinque rufo-testaceâ, scutello nigro, elytris rufo-testaceis tomentosis apice obtusis dehiscentibus; corpore cuneiformi subtus villo argenteo micante, abdomine utrinque nigro maculato, pedibus nigris."—*MacLeay, l. c.*

*Distichocera ferruginea*, Guérin, Voyage de la Coquille.

*Distichocera ferruginea*, Boisduval, Faune de l'Océanie, 467.

"Nigra; capite maculâ frontali, thorace vittis duabus elytrisque dense villoso-fulvis."—*Boisduval, l. c.*

*Distichocera fulvipennis*, Newman, Ent. Mag. v. 492.

"Antennæ nigræ; caput nigrum, fronte fulvo: prothorax niger, lineis 2 dorsalibus, longitudinalibus, latis, fulvis: scutellum nigrum: elytra fulva: abdomen piceum, lanugine argentea vestitum: pedes picei. (Corp. long. 9 unc.; lat. 3 unc.)"—*Newman, l. c.*

I have cited entire the original specific characters in every instance, in order to save the reader the trouble of making the references. I will now proceed to give more detailed characters.

*Male.*—Head somewhat cordate, black, velvety, having a slight epicranial sulcus, which is prolonged anteriorly between the bases of the antennæ: face slightly inclined, rather long: eyes arcuate, reniform, pitchy brown, large, approaching on the epicranium, somewhat dilated on the cheeks: antennæ as long as the body, 12-jointed, black; the first joint short, stout, somewhat obconical; the second very short; the following, to the eleventh inclusive, moderately short, still much longer than the second, somewhat cyathiform as regards the shaft, and emitting from its apex two long branches; these increase in length from the first pair, and those on one side of each antenna are uniformly longer than those on the other; this discrepancy is particularly observable in the third (or first branched) joint; the twelfth joint is club-shaped and undivided; it is longer than either of the others, yet scarcely exceeds in length the branches of the eleventh. Prothorax subquadrate, its anterior and posterior margins nearly equal, its lateral margins somewhat uneven, but not produced into a central tooth; pronotum somewhat uneven, black, with four greyish spots, which are due to a grey velvety pilosity; the two smaller of these touch the anterior, the two larger the posterior margin, and appear as though forming parts of two vittæ, each of which is interrupted in the middle; prosternum produced between the procoxæ and there deeply notched, pitchy red, and clothed with a grey pilosity. Scutellum rounded, black, and glabrous. Elytra black, broad at the base, gradually tapering to the apex, where they are slightly divaricate, truncate, and furnished with a small obtuse and obscure tooth in the middle as well as at each angle of the truncature: each elytron has three carinæ; the first is prominent, originates near the base, and curves towards the suture but without reaching it, terminating in the apical area; the second originates on the disk considerably below the humeral angle, and running parallel with the first, unites therewith in the apical area; the third is nearly obsolete; it is situate on the apical half of the elytron, between the second carina and the costal margin; the costal margin is pitchy red, and clothed with a grey pubescence: the wings are fuliginous, slightly longer than the elytra, and unfolded: the legs are rather long; the metatibiæ slightly incurved, and furnished with two apical spines: the under surface of the thoracic and abdominal segments is of a pitchy red colour, clothed with a sparse grey pubescence; the legs are of a similar colour, but the pubescence is scarcely observable.

*Fem.*—Head somewhat cordate, black, velvety, with a large fulvous spot occupying the face and extending to the epicranium between the eyes, but not reaching the anterior margin of the prothorax; a deep longitudinal epicranial sulcus extends forwards to between the bases of the antennæ: eyes arcuate, reniform, pitchy black: antennæ more than half the length of the body, 11-jointed; the first joint rather short, somewhat obconical; the second very short; the third the longest, but still not disproportionately so, dilated at the apex; the fourth and fifth of the same form, but shorter; the remainder, to the eleventh, slender at the base, but dilated and somewhat cupshaped at the apex, receiving into the cup the base of the next succeeding joint, and being produced into a strong obtuse lobe, tooth, or serrature on one side; this is very conspicuous, and gives the antenna a subserrated appearance; on the opposite side is a very slight, scarcely perceptible indication of a like lobe; the eleventh joint is sesquialterous. Prothorax nearly equal in length and breadth, the anterior narrower than the posterior margin, the lateral margins uneven and slightly lobed in the middle; pronotum uneven, with a slightly impressed anterior and posterior submarginal transverse sulcus, velvety black, with two broad irregular longitudinal vittæ of a bright fulvous orange colour; prosternum produced between the procoxæ, and the process notched. Scutellum short, rounded, black, shining. Elytra at the base much wider than the prothorax, gradually narrowing to the apex, where they are slightly dehiscent, truncated, and the truncature produced in the middle into an obtuse, scarcely perceptible tooth; each elytron has three carinæ; the first is prominent, originating near the base, and curves very gradually towards the suture without reaching it, terminating in the apical area; the second is indistinct, originates near the humeral angle, and running parallel with the first, ceases in the apical area; the third is still less distinct, and its limits are obscure; at both extremities a junction between the first and second carinæ may be made out, but is not very manifest: the wings are fuliginous, slightly longer than the elytra, but scarcely so long as the abdomen; the entire under-surface is pitchy red clothed with a silvery grey pubescence, but there is an ovoid denuded space on each side of each abdominal segment. Legs pitchy red; tarsi pitchy black; metatibiæ with two apical spines.

*Obs.*—I believe that no author has hinted at the union of these very dissimilar insects under one specific name, but I think such a proceeding will be borne out by the evidence. In the first place I would observe that both forms are equally abundant; that they occur in the same situations and at the same season; that collectors have several times reported them as only sexually different; and finally, that all the individuals of *maculicollis* are males, and all the individuals of *fulvipennis* females. Then, as regards structure, the cibarian organs of the two forms closely approximate; so also does the direction and general figure of the head; the antennæ indeed are remarkably different, but this discrepancy obtains equally in several genera of longicorns and in many other groups of Coleoptera, the males invariably possessing in such instances the longer, more compound and more ornate antennæ. The discrepancy in the prothorax, which at first is very striking, will be found more in appearance than in fact, and more in colour than in figure; and even in colour an analogy exists that would be likely to escape the superficial observer; the two fulvous vittæ so conspicuous in *fulvipennis* appear divided, paler, and semi-obsolete in *maculicollis*, and the difference in the figure of this part is in simple accordance with the more robust habit in the supposed female: the discrepancy in the elytra again is considerable as regards width, and particularly striking as regards colour; but their structure is normally the same; the number, direction and comparative length of the carinæ being identical: the legs are precisely alike in the two forms in structure, proportions, size and colouring. So that the reasons for uniting the forms under one specific name are stronger than any that can be urged for keeping them distinct; and their not having been united by Kirby, MacLeay, Guérin, or Boisduval, merely implies that the idea did not occur to those distinguished entomologists: there is no evidence that they maturely weighed and then rejected the conclusion.

2. DISTICHOCERA PAR. *Sexuum amborum color par: testaceo-fusca, maris capite prothoracisque disco saturatioribus; omninò pilis cinereis obsita.*

Maris long. corp. ·525 unc.; elytrorum lat. max. ·2 unc.

Feminæ long. corp. ·7 unc.; elytrorum lat. max. ·225 unc.

*Male.*—Antennæ, anterior margin of prothorax, elytra, legs, and entire under-surface testaceous brown, the head and disk of the prothorax being darker; a longitudinal, narrow, silvery spot, due to the presence of a velvety pilosity, is observable in the centre of each elytron; every part of the body is more or less thickly beset with a grey pilosity.

*Female.*—Almost exactly resembling the male, but the prothoracic disk is not darker than the elytra, and there is no silvery mark in their centre.

In both sexes the carination of the elytra follows that of *D. maculicollis*, but is less pronounced.

Compared with *D. maculicollis* both sexes of this species are of smaller size, and the discrepancy in breadth is rather more obvious than in length; the antennæ of the males are very similar, but the apical joint is more clavate in *par*; their colour is decidedly different, in *maculicollis* being black, in *par* testaceous, with the apices of the ramuli slightly darker; the prothorax is more rounded at the sides in *par* than in the older species; but the plainness and purity of colour in *par* are sufficient at once to distinguish it.

Male and female in the cabinet of Mr. Scott, to whom I am indebted for the opportunity of describing it.

3. DISTICHOCERA KIRBYI.

Mas. *Caput nigrum, longitudinaliter sulcatum, antennæ dimidio corporis longiores,* 11-*articulatæ, articulis* 3–10 *biramosis,* 11o *sesquialtero: prothorax niger vittis* 2 *latis fulvis, dorso inæqualis lateribus medio* 1-*dentatus: scutellum nigrum: elytra fulva,* 5-*carinata, apice dehiscentia, singulo truncato, truncaturâ bisinuatâ: pedes nigri.*

Corp. long. 1·15 unc.; elytrorum lat. max. ·3 unc.

Fem. *Caput nigrum, longitudinaliter sulcatum, antennæ dimidio corporis vix longiores,* 11-*articulatæ articulis* 4–8 *apice emarginatis: prothorax niger vittis* 2 *latis fulvis, lateribus medio* 1-*dentatus: scutellum nigrum lateribus fulvum: elytra fulva* 5-*carinata apice dehiscentia, singulo truncato, truncaturâ bisinuatâ, pedes nigri.*

Corp. long. 1·25 unc.; elytrorum lat. max. ·375 unc.

*Male.*—Head black, with the exception of a scarcely perceptible fulvescent tinge on the short velvety down of the epicranium; a deep epicranial longitudinal sulcus extends forwards between the antennæ: eyes arcuate, reniform, pitchy black, large, approaching on the epicranium, dilated and gibbose on the cheeks: antennæ more than half the length of the body, 11-jointed; the first joint rather short, stout, somewhat in the common shape of a reversed cone; the second joint very short; the following, to the tenth inclusive, short, somewhat cup-shaped towards the base, and emitting at the apex two long branches, which are slightly incrassated externally; the eleventh joint is much longer than either, slender towards the base, somewhat club-shaped and very decidedly sesquialterous: prothorax uneven on the back, somewhat restricted just behind the anterior margin; lateral margins produced in the middle into a decided strong but obtuse tooth; the posterior half of each lateral margin concave, yet the anterior and posterior margins are straight and nearly equal in breadth; the colour of the prothorax is black, with the exception of two broad fulvous irregular vittæ extending from the anterior to the posterior margin: prosternum black, shining, projecting between the anterior coxæ, and the projection deeply emarginate: scutellum rather long, blunt at the apex, perfectly black: elytra fulvous, slightly divaricating, conspicuously carinated, truncate at the apex, and the truncature sinuate carinated; the carinæ five discoidal, one costal and one sutural; the first discoidal originates at the base, and nearly runs into the sutural at about one-third of its length; the second unites with the first at the base and runs into the apical area of the wing; the third originates at the base and runs into the apical area; the fourth originates in the humeral angle, dividing at one-third of its length, and the two branches counting as two carinæ, there uniting with the two previously described in a confused manner in the apical area: the wings are fuliginous, slightly longer than the elytra, and scarcely folded at the tip: the abdomen and legs are black, the latter of moderate size and proportion: the metatibiæ are armed with two spurs.

*Fem.*—Head black, with the exception of a fulvescent tinge on the short velvety down of the epicranium: eyes reniform, or almost arcuate, ferruginous (probably by accident): antennæ rather more than half as long as the body and moderately stout, 11-jointed; the first joint moderately long; the second very short; the third about equal in length to the first, and together with the fourth, fifth, sixth, seventh and eighth inclusive, deeply notched at the apex, and receiving the base of the next preceding joint in the notch: prothorax uneven on the back, somewhat curved anteriorly, and the anterior half of each lateral margin uniting therewith in producing a somewhat semicircular outline; the posterior half of each lateral margin is concave, and a strong but obtuse central tooth is produced on each side at the point of union of the convex and concave portions of the margin; the posterior margin is nearly straight; the colour is velvety black, with two broad fulvous vittæ, extending from the anterior to the posterior margin: prosternum black, thickly sprinkled with a grey pilosity, projecting somewhat between the procoxæ, and the projection emarginate: scutellum rather long, rounded at the apex, velvety black with fulvous margins: elytra bright fulvous, conspicuously carinated, slightly divaricating, truncate at the apex, and the truncatures sinuate: the carinæ on each elytron are five in number, and are thus disposed; the first is near the suture and parallel therewith for rather more than a third of its length; it unites with the second at the base, and this runs into the apical area and there joins the third; the third originates at the base, exceeds the second slightly in length, and joins the fourth in the apical area; the fourth originates near the humeral angle and divides at about a third of its length; both branches proceed to the apical area, and there unite with the second and third: wings fuliginous, exceeding the elytra in length, and scarcely folded at the tip: legs black.

*Hab.* Australia. I have seen but a single specimen of the male, which is in the Cabinet of the Zoological Society, and one of the female, in the Cabinet of the British Museum.

4. DISTICHOCERA MACLEAYII.

Fem. *Caput nigrum, fronte ferrugineâ, longitudinaliter sulcatum: antennæ desunt: prothorax ferrugineo-lanuginosus, lateribus bituberculatus, haud dentatus: scutellum ferrugineo-lanuginosum lateribus nigrum, glabrum: elytra ferruginea* 5-*carinata apice vix dehiscentia vix truncata: pedes nigri.*

Corp. long. 1·35 unc.; elytrorum lat. max. 5 unc.

*Fem.*—Head, including the eyes, black; the face clothed with ferruginous down; epicranium impressed with a longitudinal sulcus, which is very deep between the eyes; the eyes are moderately large and reniform, the lower or cheek lobe being the largest; the face has a large and deep depression occupying the basal or upper portion of the clypeus; the first and second joints of the antennæ alone are present: prothorax black, clothed with ferruginous down, without any trace of that central black velvety vitta which obtains in the females of other described species; the anterior portion of the prothorax is smooth and somewhat ring-like; the rest of the dorsal surface uneven and tuberculated on each side; it has two obtuse tubercles: prosternum produced between the procoxæ into two short incurved, backward-directed processes which approximate at their apices, leaving an aperture through which the point of a needle may be passed: scutellum semicircular, clothed with ferruginous, with the exception of the margin, which is glabrous: elytra ferruginous and clothed with ferruginous down, wide at the base, narrowing to the apex and then truncate, the angles of the truncature being obtuse; the elytra are carinated, each having five carinæ; the first is very short and nearly obtuse; it commences near the scutellum and ceases before it has reached a third of the length of the elytron; the second and third commence near the base of the wing and unite in the apical area; the third and fourth commence almost together just below the humeral angle, and unite in the apical area; the two pairs are also united, and below their union several other raised anastomosing lines form a kind of network: the abdomen and legs are black, with a short hairy pubescence; metatibiæ with two distinct apical spines.

*Hab.* Australia. A single specimen of the female, taken by Mr. Ince, R.N., in that gentleman's cabinet.

Perhaps I may be permitted to avail myself of the opportunity of stating that I am assiduously engaged in the preparation of a descriptive list of the longicorn Coleoptera of our Australian colonies, and that I shall feel deeply indebted to any members of the Zoological Society who would kindly assist me by the communication of specimens. As the extent and value of her colonies have always been a distinguishing character of Great Britain, so I think should the industry of her sons take precedence of other nations in making known to the world the abundant riches of those colonies in the field of Natural History.

## 2. A CATALOGUE OF THE SPECIES OF EMARGINULA, A GENUS OF GASTEROPODOUS MOLLUSCA, BELONGING TO THE FAMILY FISSURELLIDÆ; IN THE COLLECTION OF H. CUMING, ESQ. BY ARTHUR ADAMS, R.N., F.L.S. ETC.

### Genus EMARGINULA, Lamarck.

Head proboscidiform; tentacles subulate, with the eyes on tubercles at their external bases; foot with a range of cirrhi round the sides; mantle-margin simple; branchial plumes two; anal siphon with its angulated membranous sides projecting from the edges of the fissure; tongue with a central laminar subquadrate tooth and numerous lateral teeth.

Shell conical, with an elevated slightly recurved entire vertex turned towards the posterior end; surface cancellated; aperture emarginated in front by a slit, which runs for some distance up the shell; interior without a partition; muscular impression crescentic, interrupted in front.

*Emarginulus*, Montf.—*Patella*, sp. Linn.

1. EMARGINULA FISSURA, Linn.

*Patella fissura*, Linn. Syst. Nat. ed. 12. p. 1261.—*Emarg. fissura*, Flem.—*Emarg. lævis*, Recluz.—*Emarg. curvirostris*, Macgil.

*Hab.* British Islands. Mus. Cuming.

2. EMARGINULA RETICULATA, Chemn.

*Emarg. reticulata*, Chemn.; Sowerby, Genera (Emarg.), f. 5.

*Hab.* Malta, on stones. Mus. Cuming.

3. EMARGINULA CANCELLATA, Philippi.

*Emarg. cancellata*, Phil. En. Moll. Sicil. pl. 7. fig. 15.—?*Patella crystallina*, Wood.

*Hab.* Sicily, and island of Paros. Mus. Cuming.

4. EMARGINULA FISSURATA, Chemn.

*Patella fissurata*, Chemn. 11. 1929–30; Sowerby, Genera (Emarg.), fig. 3.—*Emarg. rubra*, Lam. Hist.

*Hab.* Seas of Europe. Mus. Cuming.

5. EMARGINULA CURVIROSTRIS, Deshayes.

*Emarg. conica*, Blainville, Man. pl. 48. fig. 4.

*Hab.* ——?

6. EMARGINULA ROSEA, Bell.

*Emarg. rosea*, Bell, Zool. Journ. vol. i. 1824.—*Emarg. pileolus*, Michaud.—*Emarg. capuliformis*, Philippi.

*Hab.* British Islands. Mus. Cuming.

7. EMARGINULA CRASSA, J. Sowerby.

*Emarg. crassa*, J. Sowerby, Min. Conch. pl. 33; Forbes and Hanley, Brit. Moll. pl. 63. fig. 2.

*Hab.* Norwegian Seas. Mus. Cuming.

8. **EMARGINULA HUZARDII**, Payrandeau.

*Emarg. Huzardii*, Payr.
*Hab.* ——?

9. **EMARGINULA SOLIDULA**, Costa.

*Emarg. solidula*, Costa.
*Hab.* Catania. Mus. Cuming.

10. **EMARGINULA ELONGATA**, Philippi.

*Emarg. elongata*, Phil. En. Moll. Sicil. pl. 110. fig. 2.
*Hab.* Mediterranean. Mus. Cuming.

11. **EMARGINULA VANICORENSIS**, Quoy et Gaimard.

*Emarg. Vanicorensis*, Quoy et Gaimard, Voy. de l'Astrol. pl. 68. fig. 19, 20.
*Hab.* Vanicoro. Mus. Cuming.

12. **EMARGINULA STRIATULA**, Quoy et Gaimard.

*Emarg. striatula*, Quoy et Gaimard, Voy. de l'Astrol. pl. 68. fig. 21, 22.
*Hab.* ——? Mus. Cuming.

13. **EMARGINULA CUVIERI**, Savigny.

*Emarg. Cuvieri*, Savigny, Egypt, tab. 3. fig. 2.
*Hab.* Egypt. Mus. Cuming.

14. **EMARGINULA CLYPEUS**, A. Adams. *E. testâ elongato-ellipticâ, valdè depressâ, testaceâ, maculâ luteolâ in medio dorsi, vertice subcentrali, posticè inclinato; costis confertis, æqualibus, radiantibus, imbricato-asperis, ornatâ; basi arcuato; aperturæ margine crenulato, anticè valdè fissurato; fissurâ magnâ; aperturâ intus bimaculosâ.*

*Hab.* Isle of Burias, Philippines, on dead shells, 7 fathoms, sandy mud. Mus. Cuming.

15. **EMARGINULA SCABRIUSCULA**, A. Adams. *E. testâ elongato-ellipticâ, depresso-conicâ, testaceâ, vertice subpostico, retrorsum inclinato; costis inæqualibus, radiantibus, imbricato-subaculeatis, asperis, et lineis elevatis, concentricis, cancellatâ; aperturâ anticè angustatâ, basi arcuatâ, margine creno-denticulato.*

*Hab.* ——? Mus. Cuming.

16. **EMARGINULA OBOVATA**, A. Adams. *E. testâ elongatâ, obovatâ, depresso-conicâ, testaceâ, vertice subcentrali, retrorsum inclinato, costellis radiantibus, imbricato-asperis, et liris elevatis, concentricis, cancellatâ; aperturâ posticè rotundatâ, anticè angustatâ, margine creno-denticulato, anticè profundè inciso.*

*Hab.* Catbalonga, isle of Samaar, on stones, 4 fathoms. Mus. Cuming.

17. Emarginula incisura, A. Adams. *E. testâ elongato-ovali, planulatâ, pallide fulvâ, vertice antico retrorsum inclinato, costellis inæqualibus, radiantibus, longitudinalibus, imbricato-asperis, et lineis elevatis, concentricis, decussatâ, basi arcuato, aperturæ margine crenulato, anticè declinato, valdè fissurato, incisurâ magnâ, longâ, haud usque ad verticem productâ, marginibus intus callosis.*
*Hab.* ——? Mus. Cuming.

18. Emarginula micans, A. Adams. *E. testâ elongato-ovali, pallide fuscâ, nitidâ, vertice posticè declinato, costellis radiantibus et lineis elevatis transversis, regulariter cancellatâ, cancelli quadrati; aperturæ margine denticulato, incisurâ magnâ et longâ.*
*Hab.* Rains Island, North Australia (*Lieut. Ince*). Mus. Cuming.

19. Emarginula punctata, A. Adams. *E. testâ ovato-conicâ, albido-griseâ, pulcherrimè viridi punctatâ, vertice subcentrali, posticè inclinato; costis longitudinalibus (majoribus cum minoribus alternatis) concinnè granulatis; aperturæ margine crenulato, excurvato, anticè valdè fissurato.*
*Hab.* San Nicholas, island of Zebu, under stones, low water. Mus. Cuming.

20. Emarginula variegata, A. Adams. *E. testâ ovato-conicâ, albidâ, rufo-fusco variegatâ, vertice acuto, subcentrali, posticè inclinato, costellis radiantibus, æqualibus, imbricato-asperis, ornatâ; aperturæ margine denticulato, anticè fissurato, fissurâ brevi subquadratâ.*
*Hab.* Isle of Camaguan, Philippines, on exposed rocks, low water. Mus. Cuming.

21. Emarginula puncticulata, A. Adams. *E. testâ elevato-conicâ, capuliformi, albâ, fusco punctulatâ, costellis planulatis, crebris, longitudinalibus, radiantibus, ornatâ; aperturâ ovali, margine crenulato, anticè profundè fissurato; fissurâ magnâ et longâ.*
*Hab.* Calapan, island of Mindoro, Philippines, on stones, 12 fathoms. Mus. Cuming.

22. Emarginula fuliginea, A. Adams. *E. testâ ellipticâ, valdè depressâ, fuligineâ, apice subcentrali, posticè inclinato, costellis æqualibus, radiantibus, granulosis, confertis, et lineis incrementi concentricis, ornatâ; aperturâ ovali, intus viridi, margine crenulato, anticè fissurato, incisurâ intus in canalem productâ.*
*Hab.* ——? Mus. Cuming.

23. Emarginula galericulata, A. Adams. *E. testâ obliquè conicâ, capuliformi, vertice valdè curvato, ultra marginem posteriorem decumbente, costellis angustis, crenulatis, radiantibus, interstitiis lineis elevatis, transversis, concinnè clathratis;*

*costâ anticâ, supra incisuram, granulato-punctatâ; aperturæ margine crenulato, anticè profundè inciso.*

*Hab.* Calapan, isle of Mindoro, on stones, 12 fathoms. Mus. Cuming.

24. Emarginula pulchra, A. Adams. *E. testâ depresso-conicâ, viridi, albo pulcherrimè radiatim pictâ, vertice subcentrali, posticè inclinato, costis radiantibus, inæqualibus, aculeato-asperis, interstitiis lineis elevatis transversis clathratis; aperturæ margine denticulato, anticè inciso, fissurâ brevi subquadratâ.*

*Hab.* Isle of Camaguan, Philippines, on exposed rocks, low water. Mus. Cuming.

25. Emarginula concinna, A. Adams. *E. testâ ovato-depressâ, albidâ, vertice postico, ad marginem declinato, costis sulcosis, distantibus, radiantibus (circa* 12), *interstitiis lineis longitudinalibus, et transversis, concinnè decussatis; aperturæ margine dentato, anticè profundè inciso.*

*Hab.* ——? Mus. Cuming.

26. Emarginula viminea, A. Adams. *E. testâ ovato-conicâ, albidâ, vertice centrali, retrorsum inclinato, costellis radiantibus, nodulosis, subæqualibus, et lineis crassis, transversis, regulariter cancellatâ; cancelli profundi, punctiformes; aperturæ margine crenato, anticè profundè inciso.*

*Hab.* Philippine Islands. Mus. Cuming.

27. Emarginula excurvata, A. Adams. *E. testâ elongato-ellipticâ, depresso-conicâ, testaceâ, apice acuto, subpostico, retrorsum inclinato, costis radiantibus, et liris concentricis, elevatis, cancellatâ, liris ad costas nodulosis, basi arcuato; aperturæ margine excurvato, crenulato, anticè profundè inciso.*

*Hab.* ——? Mus. Cuming.

28. Emarginula dilecta, A. Adams. *E. testâ elongato-ovali, subquadrangulari, albâ, valdè depressâ, vertice subpostico, retrorsum declinato, costis subdistantibus, radiantibus, asperulatis, et liris elevatis, concentricis, pulcherrimè cancellatâ; basi arcuatâ; aperturæ margine denticulato, anticè valdè fissurato.*

*Hab.* King George's Sound, South Australia. Mus. Cuming.

29. Emarginula scabricostata, A. Adams. *E. testâ ovali, valdè depressâ, albidâ, fasciis tribus, lutescentibus, radiantibus, anticè ornatâ; vertice subcentrali, posticè inclinato, costis radiantibus, distantibus, corrugatis, interstitiis valdè clathratis et corrugatis; aperturæ margine dentato et denticulato, anticè valdè inciso.*

*Hab.* Isle of Corrigidor, Bay of Manila, on dead shells, sandy mud, 12 fathoms. Mus. Cuming.

30. Emarginula candida, A. Adams. *E. testâ ellipticâ, depresso-conicâ, obliquâ, albâ, vertice subpostico, retrorsum decli-*

*nato, costis radiantibus, imbricato-asperis (majoribus cum minoribus alternatis), interstitiis clathratis; aperturæ margine denticulato, anticè profundè inciso.*

*Hab.* Port Adelaide, Australia, on the sands. Mus. Cuming.

31. EMARGINULA BELLULA, A. Adams. *E. testâ elongato-ellipticâ, subdepressâ, albidâ, vertice subpostico, declinato, costis distantibus prominentibus, lineisque transversis concinnè sculptis; carinâ, supra incisuram, puncturatâ; aperturæ margine denticulato, intus sulcato, anticè profundè inciso.*

*Hab.* Catanuan, province of Toyabos, island of Luzon, on dead shells, 10 fathoms. Mus. Cuming.

32. EMARGINULA RETECOSA, A. Adams. *E. testâ elevato-conicâ, ellipticâ, albidâ, vertice subcentrali, posticè inclinato, costis radiantibus, æqualibus, subnodosis, ornatâ; interstitiis regulariter cancellatis, cancelli in serie unico dispositi; aperturæ margine crenulato, incisurâ profundâ.*

*Hab.* Bolinao, province of Tambalas, island of Luzon, sandy mud, 10 fathoms. Mus. Cuming.

33. EMARGINULA EXIMIA, A. Adams. *E. testâ elongato-ovali, valdè depressâ, albâ, subpellucidâ, vertice postico retrorsum inclinato, costis radiantibus, distantibus, prominentibus, imbricato-nodosis, interstitiis liris transversis et longitudinalibus latè cancellatâ; totâ superficie lineolis radiantibus et concentricis pulcherrimè decussatâ; aperturæ margine denticulato, anticè profundè inciso.*

*Hab.* San Nicholas, island of Zebu, under stones, low water. Mus. Cuming.

34. EMARGINULA PLANULATA, A. Adams. *E. testâ elongato-ovali, complanatâ, vertice subcentrali, posticè inclinato, albidâ, costellis radiantibus, æqualibus, imbricato-asperis, lineisque concentricis incrementi decussatâ, basi arcuato; aperturæ margine anticè valdè inciso; incisurâ latâ et profundâ.*

*Hab.* Singapore, coarse sand and shells, 7 fathoms. Mus. Cuming.

35. EMARGINULA CUCULLATA, A. Adams. *E. testâ obovali, obliquè conicâ, albâ, vertice producto, subpostico, intorto; costis prominentibus, nodulosis, radiantibus, interstitiis cancellatis; aperturæ lateribus anticè angustatis, margine denticulato, posticè rotundato, anticè profundè fissurato, incisurâ longâ et latâ.*

*Hab.* Singapore, on shells, 7 fathoms. Mus. Cuming.

36. EMARGINULA ACULEATA, A. Adams. *E. testâ elongato-ovali, depressâ, rufescente, vertice subpostico, retrorsum inclinato; costis radiantibus, aculeato-asperis, prominentibus, interstitiis valdè clathratis; aperturæ margine denticulato, anticè fissurato, fissurâ profundâ.*

*Hab.* ——? Mus. Cuming.

37. Emarginula lævicostata, A. Adams. *E. testâ parvâ, ellipticâ, valde depressâ, apice subpostico, retrorsum inclinato, costis lævibus, radiantibus (circa* 14), *interstitiis costellis longitudinalibus, et lineis transversis latè clathratis; aperturæ margine denticulato, lateribus anticè angustatis, anticè valdè inciso.*
*Hab.* ——? Mus. Cuming.

Subgenus Clypidina, Gray.

Shell ovate, conical, surface with radiated ribs; vertex acute, central, not recurved; aperture with the margin crenulated; muscular impression fungiform, anal groove and emargination inclining towards the right anterior margin (in the natural position of shell).

1. Clypidina notata, Linn.

*Patella notata,* Linn. Chemn. Conch. vol. x. p. 321. Vign. 25. fig. C. D.
*Hab.* West Indies. Mus. Cuming.

2. Clypidina rugosa, Quoy and Gaimard.

*Emarginula rugosa,* Quoy and Gaim. Voy. de l'Astr. p. fig. .
*Emarg. conoida,* Reeve, Conch. Syst. pl. 160. fig. 7.
*Hab.* Australia. Mus. Cuming.

3. Clypidina aspera, Gould.

*Emarginula aspera,* Gould, Expedition, Shells, p. 12.
*Hab.* Sydney, New South Wales. Mus. Cuming.

4. Clypidina fungina, Gould.

*Emarginula fungina,* Gould, Expedition, Shells, p. 12.
*Hab.* Upolu. Mus. Cuming.

5. Clypidina sulcifera, A. Adams. *C. testâ ovali, depresso-conicâ, viridescenti, vertice obtuso, ad partem posteriorem posito; costellis radiantibus, interstitiis haud æquantibus, et striis incrementi ornatis; basi arcuatâ; aperturæ margine crenulato, incisurâ haud profundâ, sublaterali, intus in canalem productâ.*
*Hab.* ——? Mus. Cuming.

6. Clypidina rudis, A. Adams. *C. testâ crassâ, rudi, albidâ, depresso-conicâ, costis octo angulatis radiantibus, interstitiis costellis longitudinalibus et lineis concentricis decussatis; apice subcentrali; basi arcuato; aperturæ margine crenato, anticè sinuato, sinu intus in canalem producto.*
*Hab.* ——? Mus. Cuming.

7. Clypidina stellata, A. Adams. *C. testâ solidulâ, albidâ, ellipticâ, depresso-conicâ, apice subcentrali, costis elevatis, subspinulosis, radiantibus; interstitiis costellis et striis crebris decussantibus, exasperatis; aperturæ margine dentato, sinu sublaterali, intus in canalem apicem versus producto.*
*Hab.* Australia. Mus. Cuming.

8. **Clypidina scabricula**, A. Adams. *C. testâ elongato-ovali, obliquè conicâ, costis radiantibus, elevatis, distantibus, asperulatis, interstitiis costellis longitudinalibus et lineis scabriusculis valdè cancellatâ; vertice subcentrali, posticè inclinato; aperturæ margine dentato-crenulato; incisurâ profundâ, intus in canalem productâ.*
*Hab.* Australia. Mus. Cuming.

9. **Clypidina annulata**, A. Adams. *C. testâ crassâ, ellipticâ, albidâ, annulo luteo-fusco circumcinctâ; costis elevatis asperis radiantibus distantibus, interstitiis costellis longitudinalibus et lineis transversis elevatis concinnè clathratis; aperturæ margine duplicato, incrassato, pulcherrimè fimbriato, sinu quadrato intus in canalem producto; aperturâ intus annulâ albidâ.*
*Hab.* Australia. Mus. Cuming.

10. **Clypidina acuminata**, A. Adams. *C. testâ elevato-conicâ, albidâ, viridi annulatâ, costis longitudinalibus radiantibus, imbricato-asperis, interstitiis tricostulatis, costellis imbricato-asperis; sulcis transversis concentricis, distantibus, impressâ; vertice acuminato, acuto, subcentrali; aperturæ margine valdè crenulato, sinu subquadrato, intus in canalem producto.*
*Hab.* Australia. Mus. Cuming.

11. **Clypidina candida**, A. Adams. *C. testâ ellipticâ, solidulâ, conicâ, candidâ, costellis asperulatis inæqualibus, radiantibus, et striis elevatis transversis, concentricis, decussatâ; vertice subcentrali; aperturæ margine crenulato, sinu brevi, intus in canalem producto.*
*Hab.* Port Adelaide, Australia. Mus. Cuming.

### Subgenus Tugali, Gray.

Shell oblong, narrow anteriorly, back elevated, cancellated; apex posterior and recurved; aperture with the margin crenulated, and deeply sinuated anteriorly.

1. **Tugali elegans**, Gray.

*Tugali elegans*, Gray, Cat. Moll. New Zealand.
*Hab.* New Zealand. Mus. Cuming.

2. **Tugali intermedia**, Reeve.

*Parmophorus intermedius*, Reeve, Proc. Zool. Soc. 1842; Conch. Syst. pl. 139. fig. 5, 6.
*Hab.* ——? Mus. Cuming.

3. **Tugali ossea**, Gould.

*Emarginula ossea*, Gould, Expedition, Shells, p. 13.
*Hab.* Feejee Islands. Mus. Cuming.

4. **Tugali cinerea**, Gould.

*Emarginula cinerea*, Gould, Expedition, Shells, p. 13.
*Hab.* ——? Mus. Cuming.

5. TUGALI PARMOPHOROIDEA, Quoy et Gaimard.

*Emarginula parmophoroidea*, Quoy et Gaim. Voy. de l'Astrol. pl. 68. fig. 15, 16.

*Hab.* Eastern Seas.

6. TUGALI CARINATA, A. Adams. *T. testâ elongato-ovali, dorso carinatâ, costis longitudinalibus, radiantibus, confertis, et striis transversis, concentricis, decussatâ; apice posticè declinato; basi arcuatâ; aperturæ margine crenulato, extremitate anteriori sinuato, sinu intus in canalem producto.*

*Hab.* Philippines. Mus. Cuming.

7. TUGALI CICATRICOSA, A. Adams. *T. testâ elongato-ovali, albâ, dorso valdè depressâ, costellis radiantibus et lineis concentricis elevatis decussatâ, vertice subpostico depresso excavato quasi cicatricoso, subpellucido; basi arcuato; aperturæ margine crenulato, extremitate anteriori sinuato, sinu intus in canalem producto.*

*Hab.* Philippines. Mus. Cuming.

8. TUGALI SCUTELLARIS, A. Adams. *T. testâ elongato-ovali, virido-fuscâ, tenui, dorso planulatâ, vertice postico, acuto, vix elevato, costellis radiantibus subdistantibus, et striis concentricis incrementi, decussatâ; extremitate anteriori vix sinuato; aperturâ intus fuscâ, margine subcrenulato.*

*Hab.* Bais, Philippines. Mus. Cuming.

9. TUGALI RADIATA, A. Adams. *T. testâ elongato-ovali, luteolâ, valdè depressâ, costis radiantibus, rotundatis, elevatiusculis, distantibus, et striis concentricis, ad incrementum ornatâ; aperturâ intus albidâ, margine crenulato, extremitate anteriori vix sinuato.*

*Hab.* Catanuan, Philippines. Mus. Cuming.

10. TUGALI DECUSSATA, A. Adams. *T. testâ elongato-ovali, albidâ, planulatâ, dorso carinatâ, costellis longitudinalibus, radiantibus, et lineis elevatis concentricis eleganter clathratâ; vertice acuto, postico; aperturæ margine crenulato, anticè sinuato, sinu intus in canalem producto.*

*Hab.* Philippine Islands. Mus. Cuming.

## Subgenus SUBEMARGINULA, Blainville.

Shell conical, compressed, vertex inclined towards the posterior margin; aperture with the anterior margin folded in the form of a gutter or channel; surface cancellated.

*Hemitoma*, Swainson.

1. SUBEMARGINULA EMARGINATA, Blainv.

*Emarginula emarginata*, Blainv. Man. de Malac. pl. 48 *bis*. fig. 2.

*Hab.* Honduras. Mus. Cuming.

2. SUBEMARGINULA OCTORADIATA, Gmel.

*Patella octoradiata*, Gmel.; Lister, 532.11.—*Emarg. Listeri*, Ant.
*Hab.* ——? Mus. Cuming.

3. SUBEMARGINULA DEPRESSA, Blainv.

*Emarginula depressa*, Blainv. Man. de Malac. pl. 48 *bis*. fig. 3.
*Hab.* Honduras. Mus. Cuming.

4. SUBEMARGINULA CLATHRATA, Adams and Reeve.

*Emarginula clathrata*, Adams and Reeve, Moll. Zool. Voy. Samarang, pl. 11. fig. 6.
*Hab.* Mindoro Sea. Mus. Cuming.

5. SUBEMARGINULA PANIHENSIS, Quoy et Gaimard.

*Emarginula Panihensis*, Quoy et Gaim. Voy. de l'Astrol. pl. 67. fig. 7, 8.
*Hab.* Island of Panhi. Mus. Cuming.

6. SUBEMARGINULA TRICOSTATA, Chemn.

*Patella tricostata*, Chemn.; Sowerby, Gen. of Shells, No. 34. fig. 6.
*Hab.* ——?

7. SUBEMARGINULA AUSTRALIS, Quoy et Gaimard.

*Emarginula australis*, Quoy et Gaim. Voy. de l'Astrol. pl. 68. fig. 11, 12.
*Hab.* Australia. Mus. Cuming.

8. SUBEMARGINULA ELARGIE, Quoy et Gaimard.

*Emarginula elargie*, Quoy et Gaim. Voy. de l'Astrol. pl. 68. fig. 9, 10.
*Hab.* Philippines. Mus. Cuming.

9. SUBEMARGINULA GALEATA, A. Adams. *S. testâ griseo-rufescente, elevato-conicâ, tenui, vertice subcentrali, posticè inclinato, costis tuberculosis, radiantibus, albidis, et lineis transversis, elevatis, subclathratis, costâ anticâ prominenti; aperturæ margine dentato, anticè valdè sinuato, sinu intus in canalem producto.*
*Hab.* Philippine Archipelago. Mus. Cuming.

10. SUBEMARGINULA ARABICA, A. Adams. *S. testâ albidâ, crassâ, depresso-conicâ, vertice obtuso subcentrali, posticè inclinato; costis radiantibus tuberculosis et liris elevatis transversis clathratâ; aperturæ margine incrassato, crenato, anticè sinuato, sinu intus in canalem producto.*
*Hab.* Red Sea. Mus. Cuming.

11. SUBEMARGINULA ALVEOLATA, A. Adams. *S. testâ tenui, albâ, subpellucidâ, depresso-conicâ, vertice subcentrali, posticè inclinato; costis radiantibus lirisque transversis irregulariter alveolatâ; costis ad liras nodulosis; alveolis pellucidis; aperturæ margine dentato, anticè sinuato, sinu intus in canalem producto.*
*Hab.* Honduras. Mus. Cuming.

12. Subemarginula imbricata, A. Adams. *S. testâ ovato-oblongâ, subquadrangulari, cinereo-albidâ, vertice parvo, centrali, posticè inclinato; costis radiantibus imbricato-asperis, inæqualibus, et lineis crassis irregularibus incrementi decussatâ; aperturæ margine dentato, anticè valdè sinuato, sinu subquadrato, intus in canalem producto.*

*Hab.* Mouth of Victoria River, north-east coast of Australia, under stones, low water. Mus. Cuming.

13. Subemarginula pumila, A. Adams. *S. testâ orbiculato-ovali, valdè depressâ, apice subcentrali, posticè inclinato; costis radiantibus, nodosis, inæqualibus, et lineis elevatis concentricis incrementi, decussatâ; aperturæ margine denticulato-crenato, anticè profundè sinuato; sinu subquadrato, intus in canalem producto.*

*Hab.* ——? Mus. Cuming.

14. Subemarginula catillus, A. Adams. *S. testâ elongato-ovali, valdè depressâ, vertice vix elevato, posticè inclinato; costis radiantibus nodulosis, crassis, et lineis incrementi transversis, ornatâ; aperturæ margine irregulari, crenulato, intus calloso, anticè valdè sinuato.*

*Hab.* ——? Mus. Cuming.

15. Subemarginula denticulata, A. Adams. *S. testâ elongato-ovali, albâ, novem-radiatâ, vertice acuto posticè inclinato, costis novem, crassis, rugulosis, radiantibus; intervallis costellatis, costellis longitudinalibus, asperulatis; aperturæ margine dentato, et denticulato, anticè emarginato, incisuræ lateribus incrassatis, anticè in dentes duos productis.*

*Hab.* Mexico. Mus. Cuming.

16. Subemarginula polygonalis, A. Adams. *S. testâ elongato-ovali, depresso-conicâ, albâ, octoradiatâ, vertice subcentrali, posticè inclinato, costis radiantibus subnodulosis, longitudinalibus (octo majoribus), lineis concentricis incrementi asperâ; aperturâ octagonali, margine crenulato, anticè valdè sinuato, sinu intus in canalem producto.*

*Hab.* Catanuan, Philippines. Mus. Cuming.

17. Subemarginula crassilabrum, A. Adams. *S. testâ ellipticâ, crassâ, rudi, albâ, depresso-conicâ, vertice subcentrali, eroso, costis radiantibus distantibus, inæqualibus, subaculeatis, ornatâ; aperturæ margine crenato-denticulato, posticè recto, anticè rotundato, sinuato, sinu intus in canalem producto.*

*Hab.* ——? Mus. Cuming.

18. Subemarginula nodulosa, A. Adams. *S. testâ ovatâ, obliquè conicâ, albido-rufescenti, vertice subcentrali, posticè declinato; costis longitudinalibus nodosis, radiantibus, duabus latere anterioribus permagnis, liris irregularibus transversis,*

*decussatâ; aperturæ margine irregulari, posticè acuminato, anticè truncato, sinuato, sinu intus in canalem producto.*

*Hab.* Sibonga, island of Zebu, on small stones, 10 fathoms. Mus. Cuming.

19. SUBEMARGINULA CRATITIA, A. Adams. *S. testâ ovatâ, conicâ, albidâ, vertice obtuso, centrali, posticè haud inclinato, costis radiantibus distantibus, nodulosis; interstitiis costellis duabus longitudinalibus, et lineis elevatis, transversis, eleganter cancellatis; aperturæ margine crenulato, anticè sinuato, sinu quadrato, intus in canalem producto.*

*Hab.* ——? Mus. Cuming.

20. SUBEMARGINULA SCULPTILIS, A. Adams. *S. testâ ovali, obliquè conicâ, albidâ, viridi radiatim maculatâ; vertice subcentrali, posticè valdè declinato; costis radiantibus, longitudinalibus, corrugatis; interstitiis pulcherrimè punctato-clathratis; costâ anticâ prominenti, crenulatâ; aperturæ margine undulato et crenulato, posticè rotundato, anticè truncato et sinuato, sinu intus in canalem producto.*

*Hab.* Calapan, island of Mindoro, on small stones, 12 fathoms. Mus. Cuming.

## 3. DESCRIPTION OF A NEW SPECIES OF BULIMUS FROM CALLAO, COLLECTED BY ERNESTE DENICKE.

### COMMUNICATED BY J. E. GRAY, ESQ., V.P.Z.S.

Mr. Erneste Denicke, a sailor on board a Hamburg vessel trading with Chili, called at the British Museum, and informed me that he had a new species of *Bulimus*, which he had discovered on the White-sand Hill at Chala, near Callao. He further stated that he had collected the Chilian shells, and had studied shells in general, and that he was convinced that it was a new species. Having compared the shell with the species in the English collections and the descriptions in Pfeiffer, and being satisfied that M. Denicke was correct in his idea, I propose that it should be named after that conchologist.

It was pleasing to see the intimate knowledge which he had acquired of the genera and species of shells, and the interest which he took in the study, when we consider the laborious nature of his occupation, and the very little time that he had at his command. The only holidays he had while his ship was in London were spent at the British Museum, at Mr. Cuming's collection, and in the gardens of the Zoological Society.

BULIMUS DENICKEI.

Shell conical, trochiform, white, the upper whorls small, forming a rather produced tip, the others rapidly enlarging, slightly convex, forming a conical spire, the last angularly keeled; axis perforated; mouth rhombic; outer lip slightly reflexed, acute; throat deep rose-coloured.

*Hab.* Chala, near Callao, on the Whitesand Hills.

To the preceding communication by Mr. Gray, the following details were added by Mr. Lovell Reeve:—

BULIMUS DENICKEI. *Bul. testâ pyramidali-conicâ, subampliter umbilicatâ, apice papillari, anfractibus supernè convexo-declivibus, medio acutangulis, carinatis, undique peculiariter corrugatis et malleatis, opaco-albis, immaculatis, aperturâ suboblongo-ovatâ, labro tenui, simplici, effuso, aperturæ fauce intensè purpureo-roseâ.*

*Hab.* Found imbedded in sand at the top of a lofty hill near the Port of Chala, Peru, by Mr. Erneste Denicke.

This interesting species of *Bulimus* is of about the same size and form, and belongs to the same type, as *B. lemniscatus*, inhabiting Ilo, Peru. Specifically it is very distinct, the entire surface of the shell being peculiarly indented and shrivelled, and of an opake unspotted white. The interior of the aperture is of a deep purple-rose colour.

## 4. ON A NEW SPECIES OF MUSOPHAGA.

### BY JOHN GOULD, F.R.S.

Mr. Gould exhibited to the meeting a drawing by Lieut. J. R. Stack, of a new and beautiful species of *Musophaga*, of which a living example had been for the last ten years in the possession of Lady Ross, at St. Helena. Mr. Gould also exhibited some feathers shed from the wings and tail of the bird, an examination of which, and of the drawing, satisfied him that the bird was quite distinct from all previously described members of the genus.

Lady Ross, who is at present in England, had informed Mr. Gould that the bird was about the size of a hen-pheasant, and that it had been brought to St. Helena from the western coast of Africa, but the precise locality in which it had been procured was unknown to her.

For this interesting addition to the *Musophagæ* Mr. Gould proposed the specific appellation of *Rossæ*, in honour of its amiable owner, who has promised that in the event of her not returning to St. Helena, she will have the bird brought to England, where its arrival will be hailed with pleasure by every lover of ornithological science.

MUSOPHAGA ROSSÆ.

Body, wings and tail rich deep blue; primaries and secondaries arterial blood-red, narrowly margined and more broadly tipped with purplish brown, as in the other species of the genus; crown surmounted with a high rounded crest of hair-like blood-red feathers; bill and denuded orbits yellow; irides brown.

March 25, 1851.

William Yarrell, Esq., Vice-President, in the Chair.

The following papers were read:—

## 1. CATALOGUE OF THE SPECIES OF NASSA, A GENUS OF GASTEROPODOUS MOLLUSCA BELONGING TO THE FAMILY BUCCINIDÆ, IN THE COLLECTION OF HUGH CUMING, ESQ., WITH THE DESCRIPTION OF SOME NEW SPECIES. BY ARTHUR ADAMS, F.L.S. ETC.

### Subgenus NASSA.

Shell cassiform; spire short; inner lip with the callus greatly developed.

A. Shell ribbed or nodulous.

1. NASSA ARCULARIA, Linn.

*Bucc. arcularia*, Linn.; List. Conch. pl. 970. f. 24; Kien. Bucc. pl. 28. f. 115.
*Hab.* Mauritius; Philippines, on the reefs (*H. C.*).

2. NASSA PULLUS, Linn.

*Bucc. pullus*, Linn.; Gualtieri, Test. pl. 44. fig. R; Kien. Mon. Bucc. pl. 28. f. 114.
*Hab.* ——?

3. NASSA CORONATA, Brug.

*Bucc. coronatum*, Brug.; Gualtieri, Test. pl. 44. fig. C, D; Kien. pl. 28. f. 112.
*Hab.* Philippines, on the reefs (*H. C.*).

4. NASSA MUTABILIS, Linn.

*Bucc. mutabile*, Linn.; List. Conch. t. 975. f. 30; Kien. pl. 24. f. 30.
*Hab.* Red Sea; Philippines, coarse sand, 6 fathoms (*H. C.*).

5. NASSA MARGINULATA, Lam.

*Bucc. marginulatum*, Lam.; Gualtieri, pl. 44. fig. *n*; Kien. Mon. Bucc. pl. 29. f. 117.
*Hab.* Cagayan, Philippines (*H. C.*).

6. NASSA TIARULA, Kien.

*Bucc. tiarula*, Kien. Mon. Bucc. pl. 30. f. 4.
*Hab.* Isle of Ticao, Philippines, under stones (*H. C.*).

7. NASSA POLYGONATA, Lam.

*Bucc. polygonatum*, Lam. Voy. de l'Astrol. pl. 32. f. 28, 29.
*Hab.* Port Jackson, New Holland.

8. NASSA LUTEOSTOMA, Kien.
*Bucc. luteostoma,* Kien. Mon. Bucc. pl. 30. f. 1.
*Hab.* Coast of Senegal.

9. NASSA PAUPERATA, Lam.
*Bucc. pauperatum,* Lam.; Gualtieri, pl. 44. fig. *m.*
*Hab.* Signet Bay, North Australia (*Mr. Dring*).

10. NASSA LIVESCENS, Phil.
*Bucc. livescens,* Phil. Zeit. f. Malac. 1848, p. 135.
*Hab.* Philippines (*H. C.*).

11. NASSA CANDENS, Hinds.
*Nassa candens,* Hinds, Voy. Sulph. Zool. Moll. pl. f.
*Hab.* Marquesas Islands.

12. NASSA GEMMULATA, Lam.
*Bucc. gemmulatum,* Lam.; Petiver, Amb. pl. 64. f. 7; Kien. Mon. Bucc. pl. 22. f. 84.
*Hab.* Indian Seas.

13. NASSA ANTILLARUM, Phil.
*Bucc. antillarum,* Phil. Zeit. f. Malac. 1848, p. 139.
*Hab.* West Indies.

14. NASSA STURMII, Phil.
*Bucc. Sturmii,* Phil. Zeit. f. Malac. 1848, p. 135.
*Hab.* Philippines (*H. C.*).

15. NASSA NODIFERA, Phil.
*Bucc. nodiferum,* Phil. Zeit. f. Malac. 1848, p. 136.
*Hab.* Island of Ticao, Philippines (*H. C.*).

16. NASSA MŒSTA, Hinds.
*Nassa mœsta,* Hinds, Moll. Zool. Sulph. pl. f.
*Hab.* Central America.

17. NASSA LYRILLA, Beck.
*Nassa Lyrilla,* Beck.
*Hab.* East Indies.

18. NASSA ISABELLEI, d'Orb.
*Bucc. Isabellei,* d'Orb. Voy. Amér. Mérid. t. 61. f. 19.
*Hab.* Central America.

19. NASSA CREMATA, Hinds.
*Nassa cremata,* Hinds, Zool. Voy. Sulph. pl. 9. f. 8, 9.
*Hab.* Philippines.

20. NASSA VENUSTA, Dunker.
*Bucc. venustum,* Dunker; Phil. Abild. t. 2. f. 1.
*Hab.* Corrigidor Island, 6 fathoms, coarse sand (*H. C.*). Mus. Cum.

21. Nassa Gruneri, Dunker.
*Bucc. Gruneri*, Dunker; Phil. Abild. (Buccinum) t. 2. f. 2.
*Hab.* Island of Ticao. Mus. Cuming.

22. Nassa crassa, Koch; Phil. Abild. (Buccinum) t. 2. f. 4.
*Bucc. crassum*, Koch.
*Hab.* Swan River; Philippines. Mus. Cuming.

23. Nassa margaritifera, Dunker.
*Bucc. margaritiferum*, Dunker; Phil. Abild. (Buccinum) t. 2. f. 12.
*Hab.* ——?

24. Nassa caperata, Philippi.
*Bucc. caperatum*, Phil. Abild. t. 2. f. 18.
*Hab.* Philippines.

25. Nassa Jonasi, Dunker.
*Bucc. Jonasi*, Dunker; Phil. Abild. (Buccinum) t. 2. f. 10.
*Hab.* ——?

26. Nassa gemma, Philippi.
*Bucc. gemma*, Phil. Abild. (Buccinum) t. 1. f. 5.
*Hab.* Island of Ticao, under stones, low water. Mus. Cuming.

27. Nassa semigranosa, Dunker.
*Bucc. semigranosum*, Dunker; Phil. Abild. t. 1. f. 9 (Buccinum).
*Hab.* ——?

28. Nassa albescens, Dunker.
*Bucc. albescens*, Dunker; Phil. Abild. (Buccinum) t. 2. f. 15
*Hab.* ——?

29. Nassa splendidula, Dunker.
*Bucc. splendidulum*, Dunker; Phil. Abild. t. 3. f. 13.
*Hab.* ——?

30. Nassa coronula, A. Adams. *N. testâ ovato-conicâ, cinerescente, fasciâ supra albidâ, infra fusco ornatâ; spirâ brevi; anfractibus ad suturas angulatis, longitudinaliter costatis, costis distantibus rotundis supra nodulosis; labio callo crasso obtecto; columellâ rugosâ; labro extus marginato, intus lirato.*
*Hab.* Corrigidor, Bay of Manila, under stones, low water (*H. C.*). Mus. Cuming.

31. Nassa dispar, A. Adams. *N. testâ ovato-conicâ, ventricosâ, lævi, lutescente, rufo cinereoque varie pictâ; anfractibus supernè gibbosis; labio callo albo mediocri tecto; columellâ transversim corrugatâ; labro anticè dentato, intus lirato.*
*Hab.* Philippines, sandy mud (*H. C.*). Mus. Cuming.

32. Nassa stigmaria, A. Adams. *N. testâ ovato-ventricosâ, rufescente, albo fuscoque variegatâ et punctatâ; liris granosis*

*transversis ornatâ, granis planis quadratis; labio lævi, callo albo nitido obtecto, labro margine dentato.*

*Hab.* Island of Siquijor, Philippines, under stones (*H. C.*). Mus. Cuming.

33. Nassa Siquijorensis, A. Adams. *N. testâ ovatâ, subturritâ, rufescente, fasciâ pallidâ cinctâ, longitudinaliter costellatâ; suturâ tubercùlis moniliformibus ornatâ, costellis permultis confertis, interstitiis transversim striatis; columellâ corrugatâ, labro anticè valdè dentato.*

*Hab.* Island of Siquijor, Philippines (*H. C.*). Mus. Cuming.

34. Nassa retecosa, A. Adams. *N. testâ ovatâ, acuminatâ; spirâ acutâ, rufescente, suturâ canaliculatâ, cingulis albis transversim et longitudinaliter cancellatâ; labro crenato, anticè dilatato et sinuato; labio callo, subexpanso, anticè recto.*

*Hab.* Albay, Luzon, coarse sand, 6 fathoms (*H. C.*). Mus. Cum.

35. Nassa verrucosa, A. Adams. *N. testâ ovato-acuminatâ, spirâ productâ; suturâ canaliculatâ, rufescente, fusco sparsim punctatâ, liris transversis granosis ornatâ, granis rotundis verruciformibus in seriebus obliquis longitudinalibus dispositis; labio valdè calloso, tuberculato, albo; labro margine serrato.*

*Hab.* Eastern Seas.

36. Nassa variegata, A. Adams. *N. testâ ovato-ventricosâ, albido-griseâ, fuscoque variegatâ, longitudinaliter striatâ, liris transversis granosis subdistantibus ornatâ, granis rotundis in seriebus obliquis longitudinalibus dispositis; labio tuberculato callo tenui expanso tecto, labro margine crenato.*

*Hab.* Dalmaguete, island of Negros, Philippines (*H. C.*). Mus. Cuming.

37. Nassa cælata, A. Adams. *N. testâ ovatâ, acuminatâ, subturritâ, albidâ, fasciâ rufâ cinctâ, suturâ tuberculis moniliformibus ornatâ, longitudinaliter costellatâ; costellis simplicibus, interstitiis concinnè clathratis, labio callo tenui obtecto, labro margine crenulato.*

*Hab.* Cagayan, Mindanao, sandy mud, 25 fathoms (*H. C.*). Mus. Cuming.

38. Nassa ranida, A. Adams. *N. testâ ovatâ, acuminatâ, subturritâ, rufescente, cingulis transversis granosis sculptâ, granis elongatis subquadratis in seriebus obliquis longitudinalibus dispositis; columellâ rugosâ; labio non calloso, labro valdè dentato.*

*Hab.* Burias, 6 fathoms, coral sand (*H. C.*). Mus. Cuming.

39. Nassa sordida, A. Adams. *N. testâ ovatâ, albidâ, fusco fasciatâ; suturâ tuberculis moniliformibus ornatâ; longitudinaliter costatâ, transversim valdè liratâ; labio callo albo crasso tecto; columellâ corrugatâ; labro margine calloso reflexo.*

*Hab.* Siquijor, on the reefs.

40. Nassa Cumingii, A. Adams. *N. testâ ovatâ, ventricosâ albidâ, rufo nebulosâ; suturâ canaliculatâ, liris transversis granosis sculptâ, granis quadratis in seriebus longitudinalibus dispositis; aperturâ ringente; labio corrugato, tuberculifero; labro intus valde sulcato.*
*Hab.* China. Mus. Cuming. Unique specimen.

41. Nassa crenellifera, A. Adams. *N. testâ ovatâ, acuminatâ, subturritâ, albidâ, fasciâ pallidâ rufâ cinctâ; suturâ canaliculatâ, margine crenellifero, transversim striatâ, longitudinaliter tenuissimè costatâ; columellâ sublævi; labro integro.*
*Hab.* —— ? Mus. Cuming.

42. Nassa sulcifera, A. Adams. *N. testâ ovato-ventricosâ; spirâ productâ, cinerescente, luteo-fusco variegatâ, longitudinaliter subplicatâ, transversim liratâ; anfractu ultimo infra suturam sulco impresso; labii callo crasso mediocri; collumellâ anticè biplicatâ; labro intus lirato.*
*Hab.* Algoa Bay.

43. Nassa corticata, A. Adams. *N. testâ ovato-conicâ, spirâ productâ, epidermide viridi-fusco obtectâ; anfractibus supernè nodosis; anfractu ultimo anticè cingulâ subnodosâ ornato, posticè nodulis coronato; labio vix calloso; columellâ anticè biplicatâ; labro extus marginato, intus lirato.*
*Hab.* New Zealand.

44. Nassa labecula, A. Adams. *N. testâ ovato-conicâ, obliquâ; spirâ subacuminatâ, pallidè fuscâ; anfractu ultimo fasciâ fuscâ obsoletâ cincto; anfractibus planulatis supremis costatis, ultimo supernè costato, infernè plano; labii callo expanso, tenui, nitidâ labeculâ fuscâ ornato; labro posticè incrassato, intus dentato.*
*Hab.* Burias, 6 fathoms, coral sand (*H. C.*). Mus. Cuming.

45. Nassa multicostata, A. Adams. *N. testâ ovatâ, acuminatâ, albo rufoque variegatâ, longitudinaliter costatâ; costis planis obliquis confertis permultis; labio cum callo parvo tecto; columellâ lævi, anticè biplicatâ; labro intus sulcato, margine acuto integro.*
*Hab.* Batangas, island of Luzon, 4 fathoms, coarse sand (*H. C.*). Mus. Cuming.

46. Nassa costata, A. Adams. *N. testâ ovato-conicâ, spirâ acutâ, productâ, pallidâ, anfractu ultimo maculâ rufo-fuscâ ornatâ; anfractibus convexiusculis, longitudinaliter costatis, interstitiis planis; anfractu ultimo anticè transversim striato; labio cum callo circumscripto tecto; columellâ transversim rugosâ; labro anticè dentato, intus lirato.*
*Hab.* Island of Burias, sandy mud, 6 fathoms (*H. C.*). Mus. Cuming.

47. Nassa callosa, A. Adams. *N. testâ parvâ, ovatâ, spirâ acutâ, albâ fusco-maculatâ, longitudinaliter costatâ, transversim sulcatâ; labio cum callo magno albo nitido expanso tecto; columellâ*

*anticè triplicatâ; labro margine incrassato calloso, intus dentato-lirato.*

*Hab.* Bais, island of Negros, 7 fathoms, sandy mud (*H. C.*). Mus. Cuming.

48. NASSA GEMMULIFERA, A. Adams. *N. testâ ovato-conicâ, spirâ acutâ, productâ, cinerescente rufo variegatâ, longitudinaliter plicatâ, transversim cingulatâ, cingulis ad plicas noduliferis; labio cum callo expanso albo tecto; columellâ transversim corrugatâ; labro intus lirato.*

*Hab.* Burias, 6 fathoms, coarse sand (*H. C.*). Mus. Cuming.

49. NASSA FISSILABRIS, A. Adams. *N. testâ ovato-conicâ, obliquâ, cinerescente, pallidè fasciatâ, longitudinaliter costatâ, anfractu ultimo anticè transversim sulcato; labio cum callo expanso obtecto; columellâ anticè tuberculis duobus transversis; labro anticè sinuato, posticè valde inciso.*

*Hab.* Cagayan, Prov. Misamis, island of Mindanao, 25 fathoms, sandy mud (*H. C.*). Mus. Cuming.

50. NASSA NODICOSTATA, A. Adams. *N. testâ ovato-conicâ, albâ, fasciâ pallidâ fulvâ cinctâ; anfractibus planulatis, longitudinaliter costatis, transversim evanide liratis; costis nodis distantibus instructis, supernè nodosis; labio cum callo circumscripto tecto; columellâ rugosâ, anticè acutâ, productâ; labro extus limbato, anticè valde sinuato.*

*Hab.* Island of Corrigidor, 6 fathoms, coarse sand (*H. C.*). Mus. Cuming.

51. NASSA DELICATA, A. Adams. *N. testâ ovato-conicâ, subpellucidâ, albidâ, fasciâ angustâ, fuscâ, maculisque fuscis ornatâ, longitudinaliter costatâ, costis planulatis supernè nodosis, interstitiis lineis elevatis transversis clathratis; labio calloso; columellâ anticè plicis quatuor; labro margine acuto, intus longitudinaliter sulcato, transversim lirato.*

*Hab.* Sorsogon, Albay, Luzon, coarse sand, 6 fathoms (*H. C.*). Mus. Cuming.

52. NASSA CANCELLATA, A. Adams. *N. testâ ovato-conicâ, spirâ acutâ, fulvescenti, fusco variegatâ, longitudinaliter costatâ, costis planis rotundatis, interstitiis concinnè cancellatis; labio callo magno expanso crasso obtecto; columellâ lævi, simplici; labro margine calloso incrassato, anticè subsinuato.*

*Hab.* Masbate, under stones (*H. C.*). Mus. Cuming.

53. NASSA CLATHRATULA, A. Adams. *N. testâ ovatâ, spirâ acutâ, anfractibus convexis, niveâ, longitudinaliter costatâ; costis nodulosis, interstitiis valde clathratis; labio cum callo mediocri obtecto; columellâ anticè biplicatâ; labro extus varicoso, intus lirato.*

*Hab.* Island of Siquijor, deep water, sandy mud (*H. C.*). Mus. Cuming.

54. Nassa crenolirata, A. Adams. *N. testâ parvâ, ovatâ, pallidâ, lineis angustis transversis fuscis ornatâ, longitudinaliter costatâ, costis nodulosis, supernè nodosis; aperturâ angustatâ; labio cum callo obtecto; columellâ plicis quatuor transversis instructo; labro extus marginato, intus valde dentato-lirato.*
*Hab.* ——? Mus. Cuming.

55. Nassa sinusigera, A. Adams. *N. testâ ovato-conicâ, obliquâ; spirâ acuminatâ, pallidâ, fusco variegatâ, longitudinaliter costatâ, costis supernè nodulosis, transversim sulcatâ; labio cum callo mediocri tecto; columellâ transversim corrugato-plicatâ; labro anticè valde sinuato.*
*Hab.* Catbalonga, island of Samaar, 8 fathoms, coarse sand (*H. C.*). Mus. Cuming.

56. Nassa geniculata, A. Adams. *N. testâ parvâ, ovato-conicâ, fulvâ, albo variegatâ; fasciâ latâ, transversâ, cinereo-fuscâ cinctâ, transversim striatâ, longitudinaliter costatâ; costis geniculatis; labio subcalloso, anticè bituberculato; labro extus incrassato, intus dentato-lirato.*
*Hab.* Island of Ticao, 4 fathoms, sand (*H. C.*). Mus. Cuming.

57. Nassa speciosa, A. Adams. *N. testâ ovato-conicâ, acuminatâ, lutescente, albo variegatâ, transversim liratâ, liris confertis granulosis, longitudinaliter plicatâ; plicis distantibus obliquis, supernè nodosis, nodulis albis; aperturâ albâ, anticè rufo-fusco maculatâ; columellâ lævi, callo subexpanso tectâ; labro intus evanidè lirato, margine anticè maculâ fuscâ.*
*Hab.* ——? Mus. Cuming.

58. Nassa obtusata, A. Adams. *N. testâ ovato-conicâ, spirâ obtusâ, pallidâ, rufo-fusco variegatâ, transversim liratâ, longitudinaliter costatâ, costis distantibus supernè nodosis; labio callo crasso albo obtecto; labro intus incrassato, sulcato et transversim lirato.*
*Hab.* Island of Ticao, coral sand, 7 fathoms (*H. C.*). Mus. Cuming.

59. Nassa abyssicola, A. Adams. *N. testâ parvâ, ovato-conicâ, sordidè albâ; costellis confertis longitudinalibus permultis, interstitiis concinnè clathratis ornatâ; labio arcuato, mediocriter calloso; labro intus dentato-lirato, extus incrassato.*
*Hab.* Loay, island of Bohol, clayey ground, 60 fathoms (*H. C.*). Mus. Cuming.

60. Nassa pusio, A. Adams. *N. testâ parvâ, ovato-conicâ, fulvâ, fusco variegatâ et maculosâ; costellis planis, longitudinalibus confertis ornatâ; anfractu ultimo anticè sulcato, labio cum callo nitido subexpanso tecto; labro intus sulcato, margine subreflexo.*
*Hab.* Sorsogon, Albay, isle of Luzon, 6 fathoms, coarse sand (*H. C.*). Mus. Cuming.

B. Shell spinulose; inner lip with the callus moderate, defined.

61. Nassa subspinosa, Lam.

*Bucc. subspinosum,* Lam.; Kien. Mon. Bucc. pl. 26. f. 103.
*Hab.* Gindulman, island of Bohol, Philippines, low water (*H. C.*).

62. Nassa muricata, Quoy et Gaim.

*Bucc. muricatum,* Quoy et Gaim. Voy. de l'Astr. pl. 32. f. 32, 33.
*Hab.* Puerto Galero, island of Mindoro (*H. C.*).

63. Nassa vibex, Say.

*Bucc. vibex,* Say.
*Hab.* West Indies, Philippines.

64. Nassa ambigua, Montag.

*Bucc. ambiguum,* Mont.; Kien. Bucc. Mon. pl. 21. f. 81.
*Hab.* British Islands.

65. Nassa horrida, Dunker.

*Bucc. horridum,* Dunker; Phil. Abild. t. 2. f. 8.—*Bucc. scabrum,* Dunker, olim.

*Hab.* Eastern Seas.

66. Nassa hispida, A. Adams. *N. testâ ovato-acutâ, albido-cinereâ, rufo-fusco punctatâ, nodispinosâ, longitudinaliter plicatâ; plicis cum seriebus novem tuberculorum spiniformium armatis.*

*Hab.* Loon, island of Bohol, on the reefs, low water (*H. C.*). Mus. Cuming.

Plicated, the rows of tubercles rather close together, the upper row distinct from the rest.

67. Nassa echinata, A. Adams. *N. testâ elongato-ovatâ, albidâ, nodispinosâ, longitudinaliter plicatâ, plicis quinque, seriebus tuberculorum spiniformium armatis.*

*Hab.* Galeo, island of Mindoro, 3 fathoms, sandy mud (*H. C.*).

Plicated, with the upper row of tubercles larger and distinct from the others.

### Subgenus Eione, Risso.

Shell with the back gibbous; inner lip with the callus greatly developed, surrounding the circumference of the shell.

1. Eione gibbosula, Linn.

*Bucc. gibbosulum,* Linn.; List. Conch. t. 973. f. 28; Kien. Mon. Bucc. pl. 28. f. 116.

*Hab.* ——?

2. Eione clathrata, Kien.

*Bucc. clathratum,* Kien. Mon. Bucc. pl. 27. f. 108.
*Hab.* ——?

3. Eione granifera, Kien.

*Bucc. graniferum,* Kien. Mon. Bucc. pl. 27. f. 111.
*Hab.* ——?

4. Eione Thersites, Brug.

*Bucc. Thersites*, Brug.; List. Conch. t. 971. f. 26; Kien. Mon. Bucc. pl. 28. f. 113.

*Hab.* ——?

5. Nassa circumcincta, A. Adams. *N. testâ ovatâ, cinereâ, nitidâ, dorso gibbosâ; spirâ brevi, acutâ, suturâ fuscâ; labio cum callo crasso albo nitido tecto, marginibus usque ad spiram decurrentibus fusco marginatis; columellâ lævi, anticè uniplicatâ; labro calloso marginato, intus lævi.*

*Hab.* Red Sea. Mus. Cuming.

6. Nassa dorsuosa, A. Adams. *N. testâ ovatâ, depressâ; spirâ acutâ, dorso in medio nodatâ, olivaceâ, lævi, longitudinaliter subplicatâ; labio cum callo magno crasso lutescente tecto, marginibus incrassatis usque ad spiram decurrentibus; columellâ lævi, labro margine calloso incrassato, intus sublirato.*

*Hab.* Masbate, on the mud-banks at low water (*H. C.*). Mus. Cuming.

7. Nassa orbiculata, A. Adams. *N. testâ semiorbiculari, convexo-depressâ, lævi, olivaceâ, apud dorsum gibbâ; spirâ brevi, labio cum callo expanso crasso tecto, marginibus usque ad spiram decurrentibus, columellâ lævi, labro extus calloso incrassato.*

*Hab.* ——? Mus. Cuming.

8. Nassa callospira, A. Adams. *N. testâ ovatâ, pallidâ, fasciâ transversâ cinereâ ornatâ; spirâ acutâ, transversim liratâ, plicis nodosis longitudinalibus instructâ; labio cum callo magno albo extenso tecto, marginibus usque ad spiram decurrentibus; columellâ anticè biplicatâ; labro crasso calloso, marginato, intus valde lirato.*

*Hab.* Island of Burias, 6 fathoms, coral sand (*H. C.*). Mus. Cuming.

9. Nassa nana, A. Adams. *N. testâ ovatâ, spirâ acutâ; anfractibus rotundatis, rufescente, fasciâ pallidâ luteâ ornatâ, longitudinaliter plicatâ, transversim semistriatâ; labio cum callo expanso tenui tecto; columellâ rugosulâ; labro marginato, intus sulcato.*

*Hab.* Dumaguete, island of Negros, coarse black sand, 11 fathoms (*H. C.*). Mus. Cuming.

10. Nassa bellula, A. Adams. *N. testâ ovatâ, spirâ acuminatâ, acutâ; anfractibus angulatis, pallidulâ, fasciâ luteolâ ornatâ, longitudinaliter plicatâ, transversim liratâ; interstitiis concinnè longitudinaliter striatis, labio callo magno tecto; columellâ rugosâ; labri margine rugoso calloso, intus crenulato.*

*Hab.* Catbalonga, island of Samaar, under stones, low water. Mus. Cuming.

11. Nassa bimaculosa, A. Adams. *N. testâ suborbiculari, apud dorsum valde convexâ, nodosâ; spirâ acutâ, longitudinaliter sub-*

*plicatâ, anticè transversim sulcatâ, olivaceâ, fasciâ pallidâ transversâ cinctâ, labio cum callo crasso albo magno suborbiculari cincto; columellâ lævi, anticè uniplicatâ; labro valde incrassato marginato, anticè sinuato, intus lirato, extus maculis duabus rufo-fuscis ornato.*

*Hab.* Island of Siquijor, on mud-banks (*H. C.*). Mus. Cuming.

12. Nassa leptospira, A. Adams. *N. testâ ovatâ, apud dorsum convexâ, nodosâ; spirâ productâ, acutâ, lutescente longitudinaliter plicatâ, anticè transversim striatâ, labio cum callo luteo crasso tecto; columellâ corrugatâ, labro intus lirato.*

*Hab.* Ilo Ilo, island of Panay, on mud-banks, low water (*H. C.*). Mus. Cuming.

### Subgenus Alectrion, Montfort.

Shell bucciniform; spire elevated; inner lip with the callus moderately developed; outer lip dentate, or serrate at the margin.

#### A. Shell papillose; inner lip spread.

1. Nassa papillosa, Linn.

*Bucc. papillosum*, Linn.; List. Conch. t. 969. f. 23.
*Hab.* Island of Capul, on the reefs (*H. C.*).

2. Nassa nassoides, Reeve.

*Bucc. nassoides*, Reeve, Conch. Icon. Mon. Buccinum, pl. f.
*Hab.* ——?

3. Nassa nodifera, Powis.

*Nassa nodifera*, Powis.
*Hab.* Philippines.

4. Nassa monilis, Kien.

*Bucc. monile*, Kien. Mon. Bucc. pl. 11. f. 40.
*Hab.* New Guinea.

5. Nassa crenulata, Brug.

*Bucc. crenulatum*, Brug.; Petiver, Gaz. t. 64. f. 8; Kien. Mon. pl. 23. f. 90, pl. 14. f. 49.
*Hab.* Indian Seas.

6. Nassa hirta, Kiener.

*Bucc. hirtum*, Kien. Mon. Bucc. pl. 19. f. 72.
*Hab.* New Holland.

7. Nassa Jacksoniana, Kiener.

*Bucc. Jacksonianum*, Kien. Mon. Bucc. pl. 19. f. 73.
*Hab.* Port Jackson, New Holland.

8. Nassa variabilis, Phil.

*Bucc. variabile*, Phil. En. Moll. Sicil. vol. i. p. 221.—*B. subdiaphanum*, Bivon.—*B. stolatum*, Gmel.—*B. zonale*, Brug.—*B. costu-*

*latum*, Brocc.—*B. angulatum*, Brocc.—*B. Cuvieri*, Payr.—*B. Ferussaccii*, Payr.—*B. corrugatum*, Brocc.
*Hab.* Mediterranean.

9. Nassa complanata, Powis.

*Nassa complanata*, Powis.
*Hab.* Atacamas, West Columbia.

10. Nassa seminodosa, A. Adams. *N. testâ ovato-conicâ, acuminatâ, lævi, nitidâ, fulvo-fuscescente; suturâ tuberculis moniliformibus ornatâ; longitudinaliter plicatâ, plicis supernè subnodulosis; anfractu ultimo anticè transversim sulcato, labio lævi, cum callo tenui expanso obtecto, labro anticè dentato intus lirato.*

*Hab.* Island of Annaa, South Seas, on the reefs (*H. C.*). Mus. Cuming.

B. Shell smooth, polished.

1. Nassa glans, Linn.

*Bucc. glans*, Linn.; List. Conch. t. 981. f. 40; Kien. Mon. pl. 15. f. 52.
*Hab.* Island of Ticao, Philippines, on the reefs (*H. C.*).

2. Nassa suturalis, Lam.

*Bucc. suturale*, Lam. Chem. pl. 125. f. 1199, 1200; Kien. Mon. pl. 24. f. 96.
*Hab.* Swan River.

3. Nassa elegans, Kien.

*Bucc. elegans*, Kien. Mon. Bucc. pl. 24. f. 97.
*Hab.* Indian Ocean.

4. Nassa rufula, Kien.

*Bucc. rufulum*, Kien. Mon. Bucc. pl. 24. f. 95.
*Hab.* Swan River.

5. Nassa læta, Philippi.

*Bucc. lætum*, Phil. Zeit. f. Mal. 1848, p. 141.
*Hab.* ——?

6. Nassa Bronnii, Philippi.

*Bucc. Bronnii*, Phil. Zeit. f. Malac. 1848, p. 137.
*Hab.* Corrigidor, 6 fathoms, coarse sand (*H. C.*).

7. Nassa gaudiosa, Hinds.

*Nassa gaudiosa*, Hinds, Moll. Voy. Sulph. pl. . f. .
*Hab.* Straits of Malacca.

8. Nassa picta, Dunker.

*Buccinum pictum*, Dunker, Phil. Abild. (Buccinum), t. 2. f. 6.
*Hab.* Philippines. Mus. Cuming.

9. Nassa Reeviana, Dunker.
*Buccinum Reevianum*, Dunker, Phil. Abild. (Buccinum), t. 2. f. 3.
*Nassa filosa*, Gray MSS.
*Hab*. Philippines. Mus. Cuming.

10. Nassa mucronata, A. Adams. *N. testâ ovato-conicâ, sublævi, nitidâ, longitudinaliter plicatâ, lutescenti fusco variegatâ; anfractibus rotundatis, ultimo gibboso; spirâ acutâ, mucronatâ; labio lævi; labro intus lirato.*

*Hab*. Dumaguete, isle of Negros, 11 fathoms, black sand (*H. C.*). Mus. Cuming.

11. Nassa obliquata, A. Adams. *N. testâ ovato-conicâ, obliquâ, lævissimâ, nitidâ; lineis fuscis transversis, fasciâ pallidâ ornatâ, cinerescente, albo variegatâ; labio lævi, simplici; labro intus lirato.*

*Hab*. Cagayan, province of Misamis, island of Mindanao, sandy mud, 25 fathoms (*H. C.*). Mus. Cuming.

12. Nassa punctata, A. Adams. *N. testâ ovato-conicâ; spirâ acuminatâ, lævi, cinereâ, albido punctatâ, lineolis fuscis transversis ornatâ; labio callo tenui expanso tecto; columellâ rugosâ; labro extus incrassato, intus lirato.*

*Hab*. Puerto Galero, province of Albay, isle of Luzon, coarse sand, 6 fathoms (*H. C.*). Mus. Cuming.

13. Nassa lentiginosa, A. Adams. *N. testâ ovato-conicâ; spirâ acuminatâ, lævi, nitidâ, lutescente aut cinerescente, lineis undulatis confertis pictâ, lineolis fuscis transversis ornatâ; labio cum callo tenui tecto; columellâ anticè rugosâ; labro margine incrassato, intus valde lirato.*

*Hab*. Masbate, 7 fathoms, sandy mud (*H. C.*). Mus. Cuming.

14. Nassa luctuosa, A. Adams. *N. testâ ovatâ, elongatâ, acuminatâ, subnitidâ, transversim sulcatâ, nigricante nonnunquam fasciis albo-articulatis ornatâ; anfractibus planulatis; labio callo nitido obtecto; columellâ anticè biplicatâ et tuberculis tribus instructâ; labro extus incrassato, intus valde lirato.*

*Hab*. Cagayan, province of Misamis, isle of Mindanao, under stones on the reefs (*H. C.*). Mus. Cuming.

15. Nassa stolida, A. Adams. *N. testâ ovato-conicâ; spirâ acuminatâ, solidâ, cinereâ, fusco maculatâ, longitudinaliter plicatâ; aperturâ anticè effusâ; labio reflexo, lævi, valde calloso; labro intus lævi, fusco alboque fasciato.*
*Hab*. ——? Mus. Cuming.

16. Nassa distorta, A. Adams. *N. testâ ovato-conicâ, nitidâ; spirâ acuminatâ, distortâ, pallidâ, cinereo variegatâ, lineis fuscis transversis ornatâ; aperturâ anticè valde effusâ; labio lævi, anticè biplicato; labro anticè producto, intus lirato.*
*Hab*. ——? Mus. Cuming.

17. **Nassa marmorea**, A. Adams. *N. testâ ovato-conicâ, lævi, nitidâ; spirâ subacuminatâ, albidâ, fusco marmoratâ, fasciis duabus pallidis ornatâ; anfractibus planiusculis; labio corrugato; labro extus varicoso, intus lirato.*

*Hab.* Cagayan, Mindanao, 25 fathoms, sandy mud (*H. C.*). Mus. Cuming.

18. **Nassa spirata**, A. Adams. *N. testâ ovato-conicâ, acuminatâ, lævi, nitidâ, albidâ, luteo-fusco nebulosâ; anfractibus convexiusculis, prope suturas angulatis; labio lævi; labro intus lirato, extus incrassato, anticè margine simplici non dentato.*

*Hab.* Swan River. Mus. Cuming.

### C. Shell smooth or ribbed. Inner lip defined.

1. **Nassa olivacea**, Brug.

*Bucc. olivaceum*, Brug. Favanne Conch. pl. 33. f. 2; Kien. Mon. Bucc. pl. 15. f. 53.

*Hab.* Philippines.

2. **Nassa canaliculata**, Lamarck.

*Bucc. canaliculatum*, Lam. Chem. Conch. pl. 125. f. 1194–95; Kien. Mon. Bucc. pl. 23. f. 89.

*Hab.* Philippines.

3. **Nassa unicolor**, Kiener.

*Bucc. unicolor*, Kien. Mon. Bucc. pl. 19. f. 69.

*Hab.* Australia.

4. **Nassa ornata**, Kiener.

*Bucc. ornatum*, Kiener, Mon. Bucc. pl. 124. f. 168.

*Hab.* Tranquebar, Ceylon, Indian Seas.

5. **Nassa exilis**, Powis.

*Nassa exilis*, Powis.

*Hab.* ——?

6. **Nassa rufocincta**, A. Adams. *N. testâ ovato-conicâ, subturritâ, albidâ, fasciâ transversâ rufâ ornatâ, longitudinaliter plicatâ, transversim striatâ; anfractibus subrotundatis; labio callo albo circumscripto tecto; labro extus marginato, intus sulcato.*

*Hab.* Honduras (*Dyson*). Mus. Cuming.

7. **Nassa micans**, A. Adams. *N. testâ ovato-fusiformi, albidâ, lævi, nitidissimâ; anfractibus convexiusculis supremis costellatis; labio callo tenui tecto; labro anticè crenulato, intus lirato.*

*Hab.* Cagayan, Misamis, Mindanao, 25 fathoms, sandy mud (*H. C.*). Mus. Cuming.

8. **Nassa pallidula**, A. Adams. *N. testâ ovatâ, subacuminatâ, pallidâ, lævi, anfractu ultimo anticè transversim sulcato; suturâ*

*canaliculatâ; labio cum callo circumscripto tecto; columellâ simplici; labro extus marginato, intus lirato.*
*Hab.* Malacca, coarse sand, 10 fathoms (*H. C.*).

9. Nassa compta, A. Adams. *N. testâ ovato-conicâ, subturritâ, lævi, nitidâ, rufescente pallidè variegatâ; anfractibus convexiusculis, supremis costellatis; labio cum callo circumscripto tecto; columellâ anticè corrugatâ; labro margine incrassato, albo, subreflexo.*
*Hab.* Cape St. Antonio, Africa.

10. Nassa succincta, A. Adams. *N. testâ ovatâ, subturritâ, lævi, cinerescente; fasciâ pallidâ, cinctâ, anfractibus planulatis, supremis costellatis; suturâ subcanaliculatâ; labio cum callo incrassato circumscripto tecto; columellâ dentato-rugosâ; labro posticè inflexo, anticè valde sinuato et dentato, extus limbato, intus lirato.*
*Hab.* Masbate. Mus. Cuming.

11. Nassa zonalis, A. Adams. *N. testâ ovato-acuminatâ, lævi, nitidâ, longitudinaliter striatâ; anfractu ultimo transversim sulcato; lutescente, fasciis tribus transversis rufo-fuscis cinctâ; labio cum callo tenui expanso tecto; columellâ lævi; labro extus incrassato, intus lirato.*
*Hab.* Isle of Ticao, on the reefs (*H. C.*). Mus. Cuming.

12. Nassa sertula, A. Adams. *N. testâ ovatâ, acuminatâ, lævi, nitidâ, fulvâ, albo nebulosâ; anfractibus convexiusculis, supremis costellatis; labio cum callo circumscripto tecto; columellâ transversim corrugatâ; labro extus incrassato, intus lirato.*
*Hab.* Masbate, on the reefs (*H. C.*). Mus. Cuming.

13. Nassa semiplicata, A. Adams. *N. testâ ovato-conicâ, cinereâ, fasciâ pallidâ transversâ ornatâ, nitidâ, sublævi, longitudinaliter plicatâ, plicis in anfractu ultimo sæpè evanidis, interstitiis transversim striatis; labio callo circumscripto; columellâ transversim corrugato-plicatâ; labro extus albo marginato, intus lirato.*
*Hab.* Chusan (*Benson*). Mus. Cuming.

14. Nassa cinnamomea, A. Adams. *N. testâ ovato-acuminatâ, cinnamomeâ, lævi, nitidâ, lævigatâ, sempellucidâ, anfractibus convexis; labio simplici; labro extus marginato, intus sublirato.*
*Hab.* Dumaguete, isle of Negros, under stones, low water (*H. C.*). Mus. Cuming.

15. Nassa badia, A. Adams. *N. testâ ovato-acuminatâ, lævi, nitidâ, castaneâ; anfractibus planis, supremis longitudinaliter plicatis, anfractu ultimo transversim striato; labio simplici vix calloso; labro extus marginato, intus plicato.*
*Hab.* Sinaat, province of North Ilocos, island of Luzon, on the reefs (*H. C.*). Mus. Cuming.

16. Nassa mitralis, A. Adams. *N. testá ovato-conicá, acuminatá, fuscá, sublævi, longitudinaliter semiplicatá; anfractibus planiusculis, ultimo anticè transversim sulcato; labio subcorrugato; labro extus marginato, intus valde lirato.*
*Hab.* Isinimalan, isle of Negros, on the mud-banks (*H. C.*). Mus. Cuming.

17. Nassa serotina, A. Adams. *N. testá turritá, acuminatá, serotiná, anfractu ultimo anticè cingulis duabus elevatis articulatis ornato; transversim substriatá, longitudinaliter plicatá, plicis rotundis subdistantibus; aperturá albá; columellá lævi, subcallosá; labro extus incrassato, intus lirato.*
*Hab.* Australia.

18. Nassa pulchella, A. Adams. *N. testá turritá, acuminatá, nitidá, albidá, luteo variegatá, fasciá fuscá transversá ornatá; longitudinaliter plicatá, plicis subdistantibus rotundatis tuberculis albis transversis instructis; labio calloso nitido; labro extus marginato, intus lirato.*
*Hab.* Cape of Good Hope. Mus. Cuming.

19. Nassa teretiuscula, A. Adams. *N. testá subturritá, acuminatá, lutescente aut plumbeá, fasciá angustá fuscá transversá ornatá; lævi, nitidá, longitudinaliter valde plicatá; labio cum callo mediocri tecto; columellá anticè tortuosá, plicatá; labro extus limbato, intus lirato.*
*Hab.* Eastern Seas. Mus. Cuming.

20. Nassa varicifera, A. Adams. *N. testá turritá; spirá acuminatá, pallidá, fasciis fuscis duabus transversis ornatá; anfractibus subplanulatis, varicibus albis, spiraliter instructis; suturá canaliculatá; columellá anticè plicis tribus transversis; labro extus marginato, posticè angulato, intus valde lirato.*
*Hab.* Eastern Seas.

21. Nassa scalaris, A. Adams. *N. testá ovato-conicá, subturritá, pallidá, rufo-fusco fasciatá; longitudinaliter costatá, transversim liratá; anfractibus rotundatis, tuberculis moniliformibus apud suturam; suturá subcanaliculatá; labio cum callo subexpanso tenui tecto; columellá corrugatá, anticè biplicatá; labro anticè crenulato, intus lirato.*
*Hab.* Island of Corrigidor, 7 fathoms, coarse sand (*H. C.*). Mus. Cuming.

22. Nassa planocostata, A. Adams. *N. testá ovato-conicá, cinerescente, fasciá rufo-fuscá transversim cinctá; costellis planis confertis longitudinalibus, interstitiis concinnè clathratis ornatá; labio cum callo circumscripto tecto; columellá transversim plicato-dentatá; labio anticè denticulato, intus valde lirato.*
*Hab.* Payta, Peru, under stones, low water (*H. C.*). Mus. Cuming.

### D. Shell scalariform, cancellated.

1. Nassa scalariformis, *Valenc.*

*Buccinum scalariforme*, Val.; Kiener, Monograph Bucc. pl. 21. f. 80.

*Hab.* New Guinea.

2. Nassa Roissyi, Deshayes.

*Bucc. Roissyi*, Belang. Voy. aux Ind. Or. pl. 3. f. 3, 4; Kiener, Mon. Bucc. pl. 21. f. 82.

*Hab.* Indian Ocean.

3. Nassa Reevei, A. Adams.

*Bucc. elegans*, Reeve.

*Hab.* —— ?

4. Nassa nucleolus, Philippi.

*Bucc. nucleolus*, Philippi.

*Hab.* —— ?

5. Nassa nodata, Hinds.

*Nassa nodata*, Hinds, Moll. Voy. Sulphur, pl. . f. .

*Hab.* Malacca.

6. Nassa perpinguis, Hinds.

*Nassa perpinguis*, Hinds, Moll. Voy. Sulphur, pl. . f. .

*Hab.* Bay of Magdalena, California. Mus. Cuming.

7. Nassa miga, Adanson.

*Bucc. miga*, Adanson, Voy. au Senegal, pl. 8. f. 10; Kiener, Mon. Bucc. pl. 22. f. 87.

*Hab.* Senegal. Mus. Cuming.

8. Nassa myristicata, Hinds.

*Nassa myristicata*, Hinds, Moll. Voy. Sulphur, pl. 9. f. 10, 11.

*Hab.* Cape of Good Hope.

9. Nassa pallida, Powis.

*Nassa pallida*, Powis.

*Hab.* Panama, sandy mud, 6 fathoms. Mus. Cuming.

10. Nassa nodulifera, Philippi.

*Buccinum noduliferum*, Phil. Abild. (Bucc.) t. 1. f. 3.

11. Nassa angulifera, A. Adams. *N. testâ ovato-conicâ, subturritâ, pallidè fulvâ; fasciâ fuscâ cinctâ, transversim sulcatâ, longitudinaliter plicatâ, plicis distantibus, posticè apud suturas angulatis; labio cum callo albo nitido tecto; labro margine subreflexo, intus crenulato.*

*Hab.* Galapagos Islands, 10 fathoms (*H. C.*). Mus. Cuming.

12. Nassa nodicincta, A. Adams. *N. testâ ovato-turritâ; spirâ acuminatâ, pallidâ, lineis rufis transversis cinctâ, transversim sulcatâ; plicis distantibus longitudinalibus, apud suturas noduliferis ornatâ; labio cum callo albo lævi nitido tecto; labro extus varicoso, intus lirato.*
*Hab.* Galapagos Islands, 7 fathoms (*H. C.*). Mus. Cuming.

13. Nassa Sanctæ Helenæ, A. Adams. *N. testâ ovato-conicâ, subturritâ; spirâ productâ; anfractibus rotundatis, albidâ rufo-variegatâ, longitudinaliter costatâ, costis distantibus subnodosis; anfractu ultimo anticè transversim sulcato; labio lævi, calloso; columellâ anticè uniplicatâ; labro intus lirato.*
*Hab.* St. Helena, sandy mud, 20 fathoms (*H. C.*). Mus. Cuming.

14. Nassa cinctella, A. Adams. *N. testâ ovato-conicâ, albidâ, lineis fuscis transversis cinctâ, longitudinaliter valde plicatâ, plicis distantibus, liris transversis albis, interstitiis fuscis ornatâ; labio corrugato, vix calloso; labro extus varicoso, intus valde lirato.*
*Hab.* St. Helena, 20 fathoms, sandy mud.

15. Nassa corrugata, A. Adams. *N. testâ elongatâ, subturritâ, fulvescente, rufo nebulosâ; transversim liratâ, longitudinaliter plicatâ; plicis nodulosis; anfractibus convexiusculis; labio simplici, non calloso; labro intus lirato, margine crenulato; columellâ tortuosâ, anticè productâ.*
*Hab.* Eastern Seas. Mus. Cuming.

16. Nassa turrita, A. Adams. *N. testâ elongatâ, subturritâ, pallidè fulvâ; anfractibus rotundatis; suturâ subcanaliculatâ, longitudinaliter plicatâ, transversim liratâ, liris subnodulosis; labio cum callo tenui tecto; columellâ anticè abruptè truncatâ; labro intus valde lirato.*
*Hab.* ——? Mus. Cuming.

17. Nassa Japonica, A. Adams. *N. testâ turritâ, pallidè fulvâ, fasciâ rufo-fuscâ cinctâ; longitudinaliter plicatâ, cingulis transversis ad plicas nodulosis ornatâ, interstitiis longitudinaliter striatis; labio subrugoso; columellâ anticè productâ; labro intus lirato.*
*Hab.* Japan (*Dr. Siebold*). Mus. Cuming.

18. Nassa denticulata, A. Adams. *N. testâ ovato-conicâ, fulvescente rufo maculosâ; anfractibus convexiusculis, longitudinaliter plicatâ, transversim liratâ, liris planis, interstitiis tenuissimè longitudinaliter striatis; labio cum callo albo nitido tecto, anticè producto, libero; labro intus lirato, margine denticulato.*
*Hab.* ——? Mus. Cuming.

19. Nassa nivea, A. Adams. *N. testâ ovato-conicâ, candidâ, nitidâ; anfractibus planulatis plicis longitudinalibus distantibus, transversim sulcatâ; labio cum callo mediocri tecto, margine acuto*

*producto; labro margine subcrenulato, intus lirato; columellâ anticè triplicatâ.*
*Hab.* Batangas, island of Luzon, 21 fathoms, coarse sand (*H. C.*). Mus. Cuming.

20. Nassa plicatella, A. Adams. *N. testâ ovato-conicâ, fulvâ; labro albido; anfractibus subrotundatis longitudinaliter plicatis transversim liratis, liris ad plicas nodulosis; labio cum callo mediocri; columellâ anticè uniplicatâ; labro margine acuto, intus lirato.*
*Hab.* Wallwich Bay, Africa. Mus. Cuming.

### Subgenus Tritonella, Adams; *Tritonia*, Fleming.

Shell turrited, cancellated; aperture rounded, not produced into an anterior canal; outer lip not dentate, with a marginal varix.

1. Nassa decussata, Kiener.

*Bucc. decussatum*, Kien. Mon. Bucc. pl. 30. f. 3.
*Hab.* Brisbane Water, East Australia (*Mr. R. Strange*).

2. Nassa tritoniformis, Kien.

*Bucc. tritoniformis*, Kien. Mon. Bucc. pl. 30. f. 2.
*Hab.* Senegal.

3. Nassa ascanias, Brug.

*Bucc. ascanias*, Brug. Dict. no. 42.—*B. asperulum*, Brocc.—*B. macula*, Montag.—*N. rudis*, Gualt.—*B. Lacepedii*, Payr.—*Tritonia varicosa*, Fleming.—*B. coccinella*, Lam.—*B. incrassatum*, Müll.—*B. minutum*, Penn.
*Hab.* Mediterranean.

4. Nassa fasciata, Lamk.

*Bucc. fasciatum*, Lam.; Gualtieri, pl. 43. fig. *m*; Kien. Mon. Bucc. pl. 22. f. 86.
*Hab.* New Holland.

5. Nassa dentifera, Powis.

*Nassa dentifera*, Powis; Kien. Mon. Bucc. pl. f. .
*Hab.* South America.

6. Nassa festiva, Powis.

*Nassa festiva*, Powis.
*Hab.* ——?

7. Nassa anomala, Reeve.

*Triton anomalus*, Hinds, Moll. Voy. Sulph. pl. 4. f. 13, 14.
*Hab.* Island of Quibo, Veragua.

8. Nassa scabriuscula, Powis.

*Nassa scabriuscula*, Powis.
*Hab.* ——?

9. Nassa multigrana, Dunker.
*Bucc. multigranum*, Dunker; Phil. Abild. t. 2. f. 13.
*Hab.* ——?

10. Nassa signata, Dunker.
*Bucc. signatum*, Dunker; Phil. Abild. t. 2. f. 17.
*Hab.* ——?

11. Nassa obliqueplicata, Dunker.
*Bucc. obliqueplicatum*, Dunker; Phil. Abild. (Buccinum) t. 1. f. 13.
*Hab.* ——?

12. Nassa fuscata, A. Adams. *N. testâ ovatâ, spirâ acuminatâ, anfractibus convexiusculis, fuscâ, longitudinaliter plicatâ, transversim liratâ, plicis ad liras tuberculatis, interstitiis transversim striatis; columellâ rugosâ; labro posticè sinuato, intus dentato-lirato.*
*Hab.* ——? Mus. Cuming.

### Subgenus Tritia, Risso.

Shell turrited; inner lip spreading; outer lip not dentate, without a marginal varix.

1. Nassa reticulata, Linn.
*Bucc. reticulatum*, Linn.; List. Conch. t. 966. f. 21 *a*; Kien. Mon. Bucc. pl. 23. f. 91 & pl. 19. f. 71.
*Hab.* Mediterranean.

2. Nassa Gayii, Kiener.
*Bucc. Gayii*, Kien. Mon. Bucc. pl. 21. f. 79.
*Hab.* St. Helena, sandy mud.

3. Nassa sulcata, Kien.
*Bucc. sulcatum*, Kien. Mon. Bucc. pl. f. .
*Hab.* ——?

4. Nassa concinna, Powis.
*Nassa concinna*, Powis.
*Hab.* Philippines.

5. Nassa trivittata, Say.
*Bucc. trivittatum*, Say.
*Hab.* New York.

6. Nassa dealbata, A. Adams. *N. testâ ovato-conicâ, acuminatâ, subturritâ, albidâ, fasciâ pallidâ luteâ cinctâ; anfractibus planulatis longitudinaliter plicatis, plicis nodulosis, transversim liratis; columellâ tuberculato-dentatâ; labro extus incrassato, intus dentato-lirato.*
*Hab.* Dumaguete, isle of Negros, 11 fathoms, black coarse sand (*H. C.*). Mus. Cuming.

7. Nassa costellifera, A. Adams. *N. testâ ovato-conicâ, acuminatâ, albidâ, fusco-variegatâ, fasciâ fuscâ in ultimo anfractu longitudinaliter costulatâ, transversim liratâ; costellis nodulosis; anfractibus planiusculis; labio transversim corrugato-plicato; labro intus lirato.*
*Hab.* Curimas. Mus. Cuming.

8. Nassa trifasciata, A. Adams. *N. testâ ovato-acuminatâ; spirâ acutâ, productâ, pallidè cærulescente aut albidâ, fasciis tribus transversis rufis ornatâ, longitudinaliter subplicatâ, transversim sulcatâ; columellâ lævi, callo cum nitido expanso tecto; labro margine acuto, intus lirato.*
*Hab.* Vigo Bay (*M'Andrew*). Mus. Cuming.

### Subgenus Desmoulea, Gray.

Shell subglobose, covered with a downy epidermis; spire short; apex papillary.

1. Nassa abbreviata, Wood.
*Bucc. abbreviatum*, Wood, Chem. Conch. pl. 153. f. 1463; Kien. Mon. Buccinum, pl. 26. f. 105.
*Hab.* Indian Ocean.

2. Nassa retusa, Lam.
*Bucc. retusum*, Lam., Chem. Conch. t. 153. f. 1465; Kien. pl. 24. f. 94.
*Hab.* ——?

3. Desmoulea pinguis, A. Adams. *D. testâ ovatâ, abbreviatâ, ventricosâ; spirâ brevi, apice mucronato; anfractibus gibbosis, lutescente albo variegatâ; epidermide fusco villoso tectâ, transversim striatâ; labio calloso; columellâ lævi, anticè tuberculo unico, uniplicatâ; labro intus lirato.*
*Hab.* Senegal. Mus. Cuming.

4. Desmoulea pyramidalis, A. Adams. *D. testâ ovato-conicâ; spirâ acuminatâ, apice obtuso, violascente, longitudinaliter evanidè plicatâ, transversim sulcatâ; labio fusco subcalloso simplici; labro extus marginato, intus lirato.*
*Hab.* ——? Mus. Cuming.

5. Desmoulea crassa, A. Adams. *D. testâ ovato-conicâ, abbreviatâ, solidâ, lævi; spirâ obtusâ, apice violaceo; anfractibus supernè gibbosis, rufescente albo variegatâ, transversim sulcatâ; labio cum callo crasso tecto; columellâ transversim liratâ, anticè uniplicatâ, tuberculis duobus instructâ; labro intus lirato.*
*Hab.* Japan. Mus. Cuming.

6. Desmoulea Japonica, A. Adams. *D. testâ ovatâ, lævi, nitidâ, anticè transversim sulcatâ, fulvescente, maculis lineisque transversis fuscis ornatâ, albo variegatâ; labio anticè calloso; columellâ anticè tuberculis tribus instructâ; labro extus incrassato, intus lirato.*
*Hab.* Japan (*Siebold*). Mus. Cuming.

### Subgenus Aciculina, A. Adams.

Shell turrited; inner lip with a circumscribed callus free anteriorly; outer lip with the margin thickened and flexuose.

1. Aciculina costata, A. Adams. *A. testâ turritâ, acuminatâ, serotinâ, nitidâ, longitudinaliter costatâ, transversim sulcatâ; labio calloso, anticè fusco, producto; labri margine subrecto, intus lirato.*

*Hab.* ——? Mus. Cuming.

2. Aciculina striata, A. Adams. *A. testâ ovato-turritâ, fuscâ, fasciâ pallidâ transversâ ornatâ, anfractu penultimo gibboso ad suturas longitudinaliter plicatâ, transversim valde striatâ; labio calloso; labri margine vix incrassato, intus lirato.*

*Hab.* San Nicholas, isle of Zebu, 5 fathoms, sandy mud (*H. C.*). Mus. Cuming.

3. Aciculina labiata, A. Adams. *A. testâ turritâ, acuminatâ, nitidâ, cinerescente, fasciâ pallidâ transversâ ornatâ, longitudinaliter costatâ, costis ad suturam nodulosis, transversim sulcatâ; labio fusco, calloso; labro margine incrassato, fusco, valde flexuoso, posticè sinuato, in medio producto.*

*Hab.* Malacca, coarse sand, 10 fathoms (*H. C.*). Mus. Cuming.

4. Aciculina glabrata, A. Adams. *A. testâ turritâ, acuminatâ, lævi, nitidâ, longitudinaliter substriatâ, albidâ, fasciis cinerescentibus maculisque fuscis ornatâ; labio calloso, anticè uniplicato; labri margine incrassato, flexuoso, in medio producto.*

*Hab.* Philippines. Mus. Cuming.

5. Aciculina maculata, A. Adams. *A. testâ turritâ, lævi, nitidâ, albâ, maculis luteo-fuscis longitudinalibus ornatâ, transversim sulcatâ, sulcis distantibus; labio calloso, anticè producto; columellâ uniplicatâ; labro extus marginato, intus lirato.*

*Hab.* Banang, Sargassinan, isle of Luzon, muddy sand, low water (*H. C.*). Mus. Cuming.

6. Aciculina vittata, A. Adams. *A. testâ turritâ, albidâ, nitidâ, fasciâ transversâ fuscâ interruptâ ornatâ, transversim sulcatâ, longitudinaliter costatâ; labio calloso; columellâ bituberculatâ, et anticè valde uniplicatâ; labro extus varicoso, intus dentato-lirato.*

*Hab.* Ticao, coral sand, 6 fathoms (*H. C.*). Mus. Cuming.

## 2. On a new species of the genus Montifringilla.

By John Gould, F.R.S.

For a knowledge of this species we are indebted to Lord Gifford, by whom several examples were killed in Thibet. It is intimately allied to *Montifringilla Gebleri*, but differs in being of a larger size, in the darker colouring of the head and face, and in the deeper tint of the back and rump; the latter part is moreover ornamented with a patch of blood-red, which has suggested the specific name of *hæmatopygia* as an appropriate appellation; it also differs from *M. Gebleri* in being destitute of the orange-red mark on the shoulders.

MONTIFRINGILLA HÆMATOPYGIA.

Face and forehead brownish black, gradually blending into the light greyish brown of the upper surface; rump stained with blood-red; upper tail-coverts brown, tipped with dull white; tail dark brown, each feather margined externally with white; wing-coverts hoary; wings dark brown, the first four primaries narrowly edged with white, the next five primaries with a broad streak of white along the basal portion of their external webs, terminating in a line with the extremities of the secondaries, which are externally fringed with hoary; spurious wing dark brown, margined at the base with whitish; under surface very light brown, gradually becoming paler, until on the under tail-coverts the hue is buffy white; bill and feet bluish black.

Total length, $6\frac{1}{2}$ inches; bill, $\frac{1}{2}$; wing, $4\frac{1}{4}$; tail, $2\frac{1}{2}$; tarsi, 1.

## 3. ON SOME NEW SPECIES OF TROCHILIDÆ.

### BY JOHN GOULD, F.R.S.

Mr. Gould exhibited some remarkably fine examples of the *Trochilus Jardinii* of Bourcier, and then characterized the following species:—

TROCHILUS (—— ?) AMABILIS.

Crown of the head shining metallic green; chin black; breast beautiful shining blue, with a line of lustrous green commencing at the angle of the bill, passing down the sides of the neck and surrounding the base; upper surface bronzy green; tail-coverts and central tail-feathers greenish bronze; lateral tail-feathers brownish black; wings purplish brown; under surface like the upper, but less brilliant; centre of abdomen and under tail-coverts grey, the centre of the latter bronzy green.

Total length, $3\frac{5}{8}$ inches; bill, $\frac{3}{4}$; wing, $2\frac{1}{8}$; tail, $1\frac{1}{4}$.

*Hab.* New Grenada.

*Remark.*—About the size of *T. albirostris.*

PHAËTHORNIS GRISEOGULARIS.

Head, upper surface and wing-coverts bronzy brown; upper tail-coverts rufous; ear-coverts blackish brown; wings purple brown; base of the tail dark brown, the apical third of the two central feathers dark grey, tipped with white, the apical third of the next feather on each side grey on the inner web, buff on the outer web, and tipped with white; the three lateral feathers on each side tipped with buff; under surface sandy buff, with a wash of dull grey down the chin and a crescent of black across the breast; upper mandible black; basal two-thirds of the under mandible yellow, apical third blackish brown; feet yellow.

Total length, $3\frac{3}{4}$ inches; bill, 1; wing, $1\frac{1}{2}$; tail, $1\frac{5}{8}$.

*Hab*. Columbia.

*Remark*.—Nearly allied to *P. Eremita* and *P. pygmæa*, but differing from them in being of a larger size, in the total absence of any crescentic black mark on the chest, in having the throat clouded with dark grey instead of buff, and the two central tail-feathers tipped with grey and their shafts black.

## 4. Note on the Suborbital Gland of the Nylghau.

### By H. N. Turner, Esq., Jun.

Among the cranial characters of the genus *Portax* I have adduced the want of a suborbital depression, and the existence of a smooth line running along the surface of the bone; and as I had observed appearances of a suborbital sinus in the living animal, which I could not detect in the dried specimens, I felt much interested in the examination of the parts in one that recently died in the Gardens, and which Mr. Mitchell kindly forwarded to me for dissection.

Externally there is a slight pit immediately in front of the orbit, and anteriorly to it a small longitudinal fold of the skin, in the middle of which is a little round pore, through which exudes a yellowish secretion, furnished by a gland placed just underneath. The gland itself is slightly larger than a hazel-nut, and is laid upon the surface of the bone without any fossa to receive it, but is firmly attached to the smooth line before observed. The tendo oculi, and a few fibres of the orbicularis palpebrarum are attached to it.

The small pit immediately in front of the orbit is merely the space below the tendo oculi, between the gland and the rim of the orbit. In the Nylghau, the existence of a "lacrymal sinus" has usually been acknowledged; but it affords a good example of the incertitude with which we can ever deny that it exists in a species of which fresh specimens have not been examined with a view to this character, and in which no traces of the organ are discernible, either in the dry skin, or in the existence of a fossa in the skull.

Pimlico, March 1851.

## 5. Letter on the Deal-fish, from Dr. Duguid to Dr. Barker. Communicated by Mr. Yarrell.

"Kirkwall, 5 March 1851.

"In April 1829, I received from Mr. Strang, Sanday, a specimen of a fish which had been found on the shores of that island, with a request that I should give him some information about it. He mentioned that he had met with many specimens during a series of years,—that it was well known to the natives of the island, by whom it was called the *Deal*-fish, and that they often found it thrown ashore, and even occasionally used it as food. I easily ascertained, from the works to which I had access, that it was a fish unknown to the British *Fauna*, but could not determine what it really was. The specimen being a good deal mutilated about the head and abdomen, and in a state of partial decomposition, I did not attempt to preserve it, but drew up as correct a description of it as its condition admitted of, which I sent to Dr. Fleming, along with all the information about it which I could obtain from Mr. Strang, and also a somewhat rough drawing. Dr. Fleming wrote, of date 8th May, 1829, at once determining the fish to be the *Gymnogaster arcticus* of Brunnich, or *Vaagmaer*, as described by Cuvier in his 'Règne Animal,' ii. 246, a native of the seas of Iceland;—at the same time mentioning some slight discrepancies, which more perfect specimens, since procured, have completely removed. With my consent, he drew up a notice of it, which was inserted in the 4th volume of 'Loudon's Magazine of Nat. Hist.,' along with a plate from the drawing sent. This article I have not met with, having merely seen Yarrell's quotations from it. Since 1829 I have met with seven or eight specimens, some of which were mutilated by birds, and some quite entire, and from the latter I have ascertained the existence of ventral fins, which are exceedingly minute and rudimental, and easily overlooked, more especially if the specimen be not quite fresh and perfect. I am now therefore enabled to say with certainty that there can be no doubt of the identity of the fish occurring in these islands with the *Vaagmaer*, as described and figured in Yarrell's Supplement to the 1st edition of his 'British Fishes,' from information supplied by Professor Reinhardt of Copenhagen, and there named *Trachypterus vogmarus*. In the first figure, given at page 14, the ventral fins are much too long and conspicuous, but they are quite correctly represented in the vignette at page 18. The late Dr. John Reid, of St. Andrews, published an article in the Annals of Nat. Hist., June 1849, describing a specimen of the *Trachypterus Bogmarus* thrown ashore on the coast of Fifeshire, in which he says, 'No unquestionably genuine specimen of this rare fish has, as far as I am aware, been hitherto found in the British seas; for the description and figure of the fishes thrown ashore in Orkney, supposed to be specimens of the Deal-fish or *Vaagmaer*, given by Dr. Fleming on the authority of Dr. Duguid, *differ in so many important points* from the Vaagmaer as must excite doubts as to their identity.' Now Dr. Reid has not stated what the important points of difference are between my description and that of Prof. Reinhardt. It is true there is one important point—important as determining the proper classification of the fish—the existence or non-existence of ventral fins. These I did not detect; but it is not surprising, considering their minuteness, and the mutilated condition of the only specimen I had then seen. We have at this moment three dried ones in the Orkney Museum, not so perfect as could be desired, but sufficiently so to determine this point, as well as the identity of the fish with the Icelandic Vaagmaer. It is strange also that Dr. Reid never mentions the existence of ventral fins in his specimen at all, and that also, while he denies that the fishes thrown ashore in Orkney are the *Deal-fish* or Vaagmaer, he should forget that the popular name *Deal*-fish is strictly of Orcadian origin."

## 6. ON AN UNDESCRIBED SPECIES OF MEGAPODIUS.

## BY L. LLEWELLYN DILLWYN, ESQ., F.G.S., F.Z.S. ETC.

(Aves, Pl. XXXIX.)

My friend Mr. James Motley, who is now conducting the operations of the Eastern Archipelago Company in Labuan, has lately sent me home a box of zoological specimens which he has collected in that island, and among the birds was the pair of the Megapodius, one of which I now produce; it is, I believe, identical with the species in the British Museum sent home by Mr. Cuming from the Philippine Islands. In the catalogue accompanying the specimens, and in several letters which I have received from him, he has described some of the habits of these curious birds, and deeming that original observations, however scanty, on the habits of almost any animal from that remote region might not be uninteresting to the Society, I have abstracted from his communications to me the following notice respecting them:—

These birds are said to be principally confined to small islands, and to such more especially as have sandy beaches; they are not uncommon in Labuan, but are, however, very rarely to be seen, as they are very shy, and frequent dense flat parts of the jungle, where the ratans grow and where the luxuriance of the vegetation renders concealment easy.

The Malays snare them by forming long thick fences in unfrequented parts of the jungle; in these they leave openings at intervals in which they place traps; the birds, running through the cover in search of food, meeting the obstruction caused by the fence, run along it till they come to one of the openings, through which they push their way and are trapped.

Their food principally consists of seeds and insects.

In walking they lift their feet very high from the ground, and set up their backs something like guinea fowls; they frequently make a loud noise, like the very loud screech of a chicken when caught.

They are very pugnacious, and fight with great fury by jumping upon one another's backs and scratching with their long strong claws.

The eggs are of a fine dark cream-colour, and of very large size, three of them weighing nearly as much as a full-grown bird. According to the general account given to Mr. Motley by the Malays, each bird lays about eight or ten at each time of breeding; the place they select for depositing them is always situated near the beach, and close within the edge of the jungle, and here they bury them in the sandy soil to the depth of about eighteen inches; over the place where they are thus buried the bird collects a large heap of shells and rubbish, so that a person who has seen their nest has no difficulty in finding it again; the eggs thus deposited are left to be hatched by the heat of the sun, and this the natives assert requires between three and four months to complete. Mr. Motley himself found upon breaking an egg which had been thus situated for nearly six weeks, that it contained merely the embryo of a chick, about as much advanced as that of a hen's egg at four days. Some other eggs which were brought him, but which he had no means of ascertaining how long they had been laid, he buried in a box of sand about 3 feet deep and exposed to the weather. At the end of about three weeks a young bird came up, not downy, but covered with little shafts or pens ready to form feathers. One of the Malays employed by Mr. Motley saw it emerge, and said that it just shook off the sand and ran away so fast that it was with difficulty caught. On the next day, when Mr. Motley first saw it, it appeared to him to be about half-grown. From the first it fed itself without hesitation, scratching and turning up the earth like an old bird. Two more afterwards emerged in the same state. According to Mr. Motley, the sexes are alike, except that the naked skin about the head is redder in the male than in the female.

In his investigations respecting the nidification of these birds, Mr. Motley was much assisted by Mr. Low, who is resident in the island.

As the Philippine specimens brought home by Mr. Cuming have not yet been characterized, I propose to name this species

### Megapodius Cumingii.

*Sp. Char.* Olivaceous brown above; blackish slate colour with a slight olivaceous tinge below; the feathers on the throat and nape are thinly dispersed, so as to leave that part nearly bare; on the hind head the feathers are somewhat lengthened, forming a kind of crest; bill black at the base, yellowish towards the tip; legs, feet and claws black; the bare skin about the head is redder in the male than in the female.

| | in. | lin. |
|---|---|---|
| Length from the tip of the bill to the end of the tail, about | 14 | 0 |
| ——— of bill from gape | 1 | 1 |
| ——— of bill from front | 0 | 10 |
| ——— of wings | 8 | 6 |
| ——— of tail, not quite | 3 | 0 |
| ——— of tarsus | 2 | 1 |
| ——— of middle toe | 1 | 11 |
| ——— of hallux | 1 | 5 |

The front toes are nearly equal, the middle toe being rather the longest, and the inner one shortest.

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To the foregoing account some additional details of considerable interest may be subjoined. These details, although dated Labuan, July 1850, were not received until after Mr. Dillwyn's communication:—

### Extract from a Letter from Mr. Hugh Low, dated Labuan, 4th of July, 1850.

"I have been using great exertions to procure for the Earl of Derby a very remarkable Gallinaceous bird, the existence of which I ascertained only three months back; having no books I am unable to refer to its genus, but it is nearer a Guinea fowl than anything else. I heard from the natives that such a bird existed, and that its eggs were occasionally to be procured. I offered a dollar each for all they would bring me; and first one was brought, afterwards five, but I could not succeed in hatching either of these under fowls. The first, after having been set upon for a month, was picked to pieces by its foster-parent, and the chick had apparently but just begun to form. The five eggs were addled. Having learned that the birds abounded on a small island, about a hundred miles along the coast, I hired a boat and five men, and sent them, about fourteen days since, with snares, &c., to endeavour to catch some of the old birds and to seek for the nests, this being the laying season, and to gather plants of *Phalcinopsis,* which grows on the same island (Pulo Tigu and Pulo Guya). They returned yesterday, bringing with them 102 eggs and only two birds, both of which had their legs injured by the snares. The sight of the eggs and birds have perfectly astonished me, the body of the former being no larger than that of a bantam, while the egg is as long, though not so broad, as that of a Chinese goose. The men say that on the different islands they visited they found a good many nests, which are placed at a little distance from the sea-shore, in the jungle of small islands, the spot being invariably marked by a large collection of sticks and branches. The eggs are found about three feet deep in the sand, and the men assure me that the bird has no communication with them except by rasping away the sand. The man I employed has lived all his life on small islands, hunting for tortoise-shell, and well knows the habits of the bird; he says the eggs are hatched entirely by the sun's heat, or rather the heat in the sand. One of the birds he brought died this morning, and I shall put its skin together with some of the eggs in a box, that you may send them to Earl Derby. I do not like to take the liberty of writing to his lordship myself, but if I can succeed in getting a lot of young birds, I shall not fail to send them to him by the very first opportunity. I have placed some of the eggs under fowls, and some in sand out of doors; some also in sand in a warm house, where I can regulate the temperature; and I have hopes of rearing, or at least of hatching, some of the chicks, if the eggs are still good: but I think that by sending the men again in three months' time with snares I might catch a lot of the young ones hatched naturally, and be able to rear them. The bird is said not to be found on the mainland: the eggs are reported excellent eating.

"Aug. 12. Of the eggs I wrote to you so much about last mail, one only has hatched: the chick came up full-fledged from under three feet of sand, and immediately ran about with the most surprising activity. It eats rice, ants' eggs, &c. with the greatest avidity, and as it is now three weeks old, I have every hope of preserving it. More of the eggs appear to have chickens in them, and I hope will hatch. The bird, as I have ascertained, is an undescribed species of *Megapodius.*"

## April 8, 1851.

Professor Thomas Bell, Sec. R.S., in the Chair.

The following papers were read:—

### 1. On the Structure of the Teeth of the American and Indian Tapirs. By John Tomes, F.R.S.

(Mammalia, Pl. XXIX.)

It is now upwards of fifteen years since the attention of physiologists and comparative anatomists was drawn to the structure of the tissues which enter into the composition of the dental organs. In 1678 Leeuwenhoek communicated a paper to the Royal Society, on the Structure of the Teeth and other Bones, in which he described the dentinal tubes. His researches, however, were not confirmed by subsequent observers, and indeed were almost entirely overlooked until the period to which I have referred. Purkinjé, in 1835, confirmed the correctness of Leeuwenhoek's observations, at the time unconscious that the tubular structure of the dentine had been previously recognised. He also described the structure of the cementum.

Prof. Retzius was in the same year engaged in examining the structure of the dental tissues, and published the results in 1836. In 1837 Prof. Retzius published a work on the subject, the substance of which was in 1839 printed in our own language by Mr. Nasmyth.

In the latter part of 1837 I was engaged in examining the dental tissues, at that time unconscious that the subject had occupied the attention of the German or Swedish anatomists. In June 1838 the results of my examination were read before the Royal Society. In September of the same year, Prof. Owen read a paper on the Structure of the Teeth, before the British Association. In 1840 the publication of Prof. Owen's 'Odontography' was commenced, and completed in 1845. In this work will be found descriptions of the structure of the teeth of animals belonging to each division of Vertebrata.

In these various essays the authors agreed generally in the main facts of dental structure, and in each successive publication new facts were related. Judging from the amount which had been published, it might have been concluded that the subject was well nigh exhausted. Such however was not the case: many blunders, in the hurry which is incident to a new subject, had been committed and required correction, while many important facts had failed to be recognised. Prof. Owen pointed out that in the Order Edentata the teeth are destitute of enamel, while it is present in the other mammalian orders, with the exception of a few isolated cases.

Having neglected the subject of dental structure for some years, in consequence of more urgent pursuits, in 1847 I again entered on the inquiry, which to me possessed great attractions, not only on account of various modifications which are to be found in the arrangement of the components of the tissues in different animals, but also in minor modifications in the teeth of the same animal.

My inquiries were first directed to human teeth; the results, both as regards structure and development, were published in my 'Lectures on Dental Physiology and Surgery,' 1838. The teeth of marsupial animals next occupied my attention. In this order it was found that the dentinal tubes are continued into and form a considerable portion of the enamel, excepting only in the Wombat. The results of these investigations will be found in the Second Part of the 'Philosophical Transactions' for 1849.

By the help of this Society I have been enabled to make an extensive series of investigations in the teeth of the Order Rodentia, with results which have far exceeded my expectations. Each family, as arranged by Mr. Waterhouse, has its peculiar structure of enamel, an account of which, with illustrations, is published in Part 2 of the 'Philosophical Transactions,' 1850.

Having, by way of preface, given a very cursory and imperfect indication of what has been done in dental structure, or rather of what has been recognised as peculiar to certain groups of mammalian animals, in order to show that the subject is not without importance, I shall proceed to lay before the Society certain peculiarities which I find exist in the teeth of the two Tapirs, and which are, to the best of my belief, confined to those creatures. It should however be understood, that similar conditions may be found in the teeth of other animals, but at present I believe they have not been seen. I have myself examined numerous examples from each of the mammalian orders, and from the great majority of the genera, and have failed to find a condition of dentine similar to that of the Tapir's tooth. Under these circumstances, it may, I think, be fairly assumed to be characteristic of those animals, and hence has a degree of importance which it otherwise would not possess. With this impression, I have thought it desirable that the facts should be recorded.

The dentine of the molar teeth, when exposed by making a longitudinal section through the centre of the crown and fangs, and reducing it sufficiently thin to be viewed by transmitted light, is seen to be composed of tubes which pursue a uniform course. Those which are destined to reach the highest parts of cusps or ridges pursue a straight course, subject to slight undulations, while others, which pass to the sides of the cusps, are turned in the latter part of their course away from the central line of the cusps or ridges; others again, which pass to the lowest points of the depressions on the masticating surface of the tooth, follow a tolerably straight course. The dentine which forms the sides of the tooth is occupied by tubes which in the outer third of their course describe a bold curve outwards, the convexity of which is directed towards the crown of the tooth, but on approaching the enamel turns a little upwards. In the fangs of the teeth, the dentinal tubes, in addition to describing a double curve, are subject to strongly-marked secondary undulations. The dentinal tubes, as they leave the pulp-cavity for the crown of the tooth, have a diameter of about the 7500th of an inch, which is gradually diminished to the 15,000th. When within a short distance of the enamel, they suddenly dilate into a more or less oval cell, from which a few very minute tubes pass off towards the line of junction of the enamel and dentine. The bulbous terminations of the tubes are more constant and larger about the prominences of the cusps, and diminish in size and frequency on the sides of the tooth, where the enamel becomes thin, at the termination of which they altogether cease. The bulbs have an average diameter of about 3450, and are in length about the 1000th of an inch. In addition to the terminal dilatations, the coronal tubes are subject to occasional dilatations in their course. It is by no means uncommon to find instances where a peripheral layer of cells lies underneath the enamel, into which the dentinal tubes pass, and through which an anastomosis is effected; but in no other teeth save those of the Tapir do the coronal tubes terminate in well-marked and uniform cell-like dilatations having distinct parietes. I have pointed out several examples, in my paper on the teeth of Rodentia, in which these peripheral cells are found, but they are irregular in shape, have not distinct parietes, and are entered by the ultimate branches of the dentinal tubes; whereas in the Tapir the cells are formed by the expansion of the tubes, which previous to the expansion give off few if any branches. Some however subdivide once or twice in their course; in which case the smaller of the divisions do not commonly dilate into terminal cells, but form anastomoses with other tubes similarly circumstanced.

In the fangs the dentinal tubes leave the pulp-cavity with a diameter of the 7500th of an inch, and speedily dilate to the 6000th. During the greater part of their course they give off very minute, hair-like, short branches; but when near their termination they increase in size, turn a little upwards towards the crown of the tooth, and send out numerous branches, the majority of which pass from the lower sides of the tubes. The ultimate branches pass into the granular tissue, which, interspersed with irregular cells, forms the outer part of the dentine of the fangs. Near the neck of the tooth the granular dentine exists as a thin layer, which becomes thickened and more opake from the greater number of cells in the lower part of the fang.

Partially obliterated vascular canals enter from the surface of the fang, and proceed in straight lines through the dentine to the pulp-cavity. In the Indian species similar vascular canals proceed from the pulp-cavity towards the ridges of the masticating surface, and appear to terminate in loops. They have a diameter of about the 1000th of an inch. In a molar tooth of the American Tapir, for which I am indebted to the Society, vascular canals do not exist in the crown. This difference will, if found to be constant, serve to distinguish the molars of the two species. Near the extremities of the fangs the dentine graduates insensibly into the granular condition, and this again into the cementum, without offering any generic peculiarities.

The cementum is in no part of the fang very abundant, as compared with the amount which is found in the teeth of many other animals. Near the neck of the tooth it is arranged in minute rods or columns, similar to that which I have described as existing in the teeth of many Rodents. In this situation it is destitute of lacunæ; but in tracing it downwards towards the root of the tooth, where it is increased in quantity, lacunæ possessing the usual characters are found. In addition to the lacunæ the cementum is traversed in parts by ill-defined canaliculi, which proceed from the surface of the fang in tolerably straight lines.

In tracing a longitudinal section of a molar tooth downwards from the crown to the end of the fang, it will be seen that at places the dentine has been removed and the space filled up with cementum. Here and in other parts the cementum is abundantly supplied with vascular canals.

The enamel does not differ in any material points from that of the teeth of Ruminants. The fibres have a minutely granular appearance and have a diameter of about the 5000th of an inch. On the sides of the tooth they pursue an outward course, and make one bold curve, the convexity of which is directed towards the masticating surface, while on the crown of the tooth their course is waved and irregular; an arrangement which no doubt adds much to the strength of the tissue in that part where the greatest strength is required.

In the incisor teeth similar peculiarities may be observed, but they are much less strongly marked than in the molar teeth. Vascular canals are, too, of less frequent occurrence in the incisor teeth.

I hope on a future occasion to be enabled to lay before the Society a statement of the peculiarities which pertain to and are characteristic of other groups of animals.

## 2. DESCRIPTION OF A NEW GENUS OF GORGONIADÆ.

By J. E. GRAY, ESQ., F.R.S., P.B.S. ETC.

(Radiata, Pl. III.)

The Coral here described was sent to me by Sir John Richardson.

It is nearly allied to *Gorgonia*, but the branches are erect, clavate, and very rarely subdivided. The bark is very thick, formed of numerous close diverging cells radiating round a very thin, small, black compressed axis, each of the cells ending in a conical prominent tubercle closely covered externally with red calcareous spicula. The expanded base and the base of the stem and the interspaces between the cells are covered with smaller red calcareous granules.

This genus may be named and characterized thus:—

### GONIGORIA.

Coral clavate, slightly branched; the root dilated; axis horns black, compressed, thin; bark thick, calcareous, covered with conical tubercles, each covered externally with numerous close red spicula.

GONIGORIA CLAVATA. (Radiata, Pl. III. fig. 1.)

Coral clavate, rounded at the end, simple, or rarely forked.

*Hab.* ——?

The coral is almost two inches high, and the thickest part is about one-third of an inch in diameter.

I take this opportunity of presenting a figure of another Coral, which, although described by me several years since, has not yet been engraved.

NIDALIA OCCIDENTALIS, Gray, Proc. Zool. Soc. 1835, p. 60. (Radiata, Pl. III. fig. 2.)

*Hab.* West Indies, Montserrat.

## 3. DESCRIPTION OF A NEW GENUS OF BIVALVE SHELLS, AND A SEA EGG, FROM NEW ZEALAND.

BY J. E. GRAY, ESQ., F.R.S., P.B.S. ETC.

Mr. Richard Taylor, of Wanganui, New Zealand, has kindly sent to the British Museum a series of marine and freshwater shells, collected by him in 1847. Among many other interesting specimens is one which combines the form and internal appearance of a *Solen* with the hinge-characters of a *Mactra*, and evidently forming the type of a genus not hitherto observed. It may be thus named and characterized:—

### VANGANELLA.

Shell equivalve, oblong, transverse, thin, compressed, rounded behind, rather produced and tapering in front, covered with a thin, hard, polished periostraca; the inner surface of each valve straight, with two diverging, thickened ribs just within the stars of the abductor muscles, which are large and far apart, and the upper front edge of the valve double; siphonal inflection short, broad; hinge-tooth of left valve folded together, moderate; of right valve small, separate; lateral teeth short, small, close to hinge-tooth of left valve double; the ligament small, just within the cardinal edge, not separated by any shell plate from the cartilage, and partly hidden from view by the upper edge of the hinge-margin; the cartilage very large, inclosed in a large, elongate, shallow, triangular pit on the upper part of the hinder internal rib.

The position of the cartilage-pit and the internal ribs at once separate this genus from *Spisula*.

VANGANELLA TAYLORII.

Shell rather compressed, white, smooth, covered with a pale brownish-white polish; periostraca darker coloured on the upper part of the front edge; the upper hinder slope irregularly wrinkled with periostraca.

*Hab.* New Zealand.

ARACHNOIDES ANTIPODARUM.

Body rather convex, with five broad sunken grooves, rather more than one-third the width of the sections of the body, and forming inflexed spaces on the edge of the circumference; ambulacra nearly straight, and regularly diverging, without any isolated pores between the end of the ambulacra and the circumference of the body.

*Hab.* New Zealand. Coast of Wanganui.

This species is easily known from the *A. placenta* of the North Sea (Agassiz, Monog. t. 21. fig. 25–42) by its being rather larger and considerably more convex, and in the grooves edged above by the ambulacra being broader compared to the sections of the shell. It differs also in having the ambulacra nearly straight and without any isolated pores between them, as in the edge of the shell figured by Agassiz, t. 21. f. 39.

The specimen was unfortunately broken in the carriage from New Zealand, and the part of the shell containing the ovarial pores was destroyed.

The upper and lower part of the shell is supported by compressed perpendicular columns, about one-third the width of the disk; near the oral disk there are placed five pairs of short processes for the support of the jaws; the jaws are triangular; they agree, as does the disposition of the spire, tubercle, and all the other external characters, with the northern species as figured by Agassiz from the specimen in the Museum collection.

## 4. REMARKS ON THE GENUS HAPALOTIS.
### BY JOHN GOULD, F.R.S.

With the view of correcting some errors respecting the members of the genus *Hapalotis*, and of describing two new species, Mr. Gould exhibited an extensive series of specimens, including several species of this curious form of Rodent, from his own collection: viz.—

1. HAPALOTIS ALBIPES, Licht.

2. HAPALOTIS APICALIS, Gould, n. s.

This new species is about the size of, and similar in colour to, *H. albipes*, but it has larger ears, and its feet, which are perfectly white, as in that animal, are much more delicately formed, and the tail is nearly destitute of the long brushy hairs towards the tip; the eye is also much smaller.

Face and sides of the neck blue-grey; upper part of the head, space between the ears, the ears and upper parts of the body, pale brown interspersed with numerous fine black hairs; under surface white; flanks mingled grey and buffy white; fore feet white, with an oblique mark of dark brown separating the white from the greyish brown of the upper surface; hinder tarsi and feet white; basal three-fourths of the tail brown, apical fourth thinly clothed with white hairs.

| | inches. |
|---|---|
| Length from the tip of the nose to the base of the tail | 8 |
| ——— of the tail | $8\frac{1}{2}$ |
| ——— of the tarsus and toes | $1\frac{3}{4}$ |
| ——— from the tip of the nose to the base of the ears | $1\frac{3}{4}$ |
| ——— of the ears | $1\frac{1}{8}$ |

3. **Hapalotis hirsutus**, Gould.

*Mus hirsutus*, Gould in Proc. Zool. Soc. part x. 1842, p. 12.

Since this singular species was brought from Port Essington by Mr. Gilbert, at the close of 1841, a second and more perfect individual, also from the northern coast of Australia, has been deposited in the British Museum.

This is the largest species of the genus.

4. **Hapalotis conditor**, Gould in Sturt's Narr. of Exp. to Central Australia, vol. i. pl. in p. 120; vol. ii. App. p. 7.

5. **Hapalotis longicaudatus**, Gould, Proc. Zool. Soc. part xii. p. 104.

6. **Hapalotis Gouldii**, Gray, App. to Grey's Trav. in Australia, vol. ii. pp. 404, 413; List of Mamm. in Brit. Mus. Coll. p. 116.

*H. Richardsonii*, Gray, on specimens in Brit. Mus.
*H. macrotis*, Gray, on specimens in Brit. Mus.
*H. Mitchellii*, Gould, Mamm. of Australia, part i. pl. 15.
*Hab.* Western and Southern Australia.

7. **Hapalotis murinus**, Gould, Proc. Zool. Soc. part xiii. 1845, p. 78.

*Hab.* South Australia and the Liverpool Plains in New South Wales.

8. **Hapalotis cervinus**, Gould, n. s.

The whole of the head, upper surface and sides of the body, of the most delicate fawn colour, interspersed with numerous fine black hairs on the head and back; whiskers greyish black; nose and under surface white; tail pale brown, lighter beneath; ears very large, somewhat pointed, and nearly destitute of hairs.

| | inches. |
|---|---|
| Length from the tip of the nose to the base of the tail | $4\frac{1}{2}$ |
| ——— of the tail | $5\frac{1}{2}$ |
| ——— of the tarsus and toes | $1\frac{1}{4}$ |
| ——— from the tip of the nose to the base of the ears | $1\frac{1}{8}$ |
| ——— of the ears | $1\frac{1}{8}$ |

This beautiful species was brought from the interior of South Australia by Captain Sturt. It is one of the smallest members of the genus, and is remarkable for the delicacy of its colouring and for the large size of its tail in comparison with that of its body.

## 5. NOTE ON A NEW SPECIES OF FRANCOLIN.

### BY DR. NICHOLSON, H.E.I.C. MEDICAL SERVICE.

(Aves, Pl. XL.)

While in Arabia in February 1836, I proceeded into the interior as far as the town of Moosa, about twenty miles to the eastward of Mocha in Yemen, accompanied by Captain Bull of the Indian Navy, in quest of plants and other objects of natural history, as well as with the view of seeing the country. Having delivered our introduction to the chief of that district, he assigned us quarters in his palace and appointed an Arab huntsman to attend us—as well to show us game, as to be a guardian to our persons. We started at daylight, mounted on asses, and pursued our course to the eastward for about six miles, when at the foot of a range of hills, in a jungle of *Acacia arabica*, we came on several large coveys of guinea-fowl. We soon found that it was of no use to attempt to get a shot by walking after them, as they soon left us; so we followed, and whenever they entered a thick piece of jungle we ran up in time to get a shot at them, being pressed to take wing. In this way we made a very good bag, to which we afterwards added a bustard (differing from the Indian) and several small hares, which were very abundant. At the first shot I brought down, as I supposed, a couple of guinea-fowl, right and left, but on picking them up found that one of them was a fine species of Francolin, coloured as in the accompanying sketch.

Bill and legs coral-red, the latter with blunt knobs for spurs; the top of the head, a line under the eye from the angle of the mouth, and a patch below it, black; round the eye and some way down the neck, buff; breast and side covered with large patches of black, buff, and light blue or french-grey; all the back and other parts french-grey; the quills are light buff.

This magnificent bird we found afterwards in pairs, betraying the same habits as the two species of Francolin in India, the male often standing and crowing on some small eminence. These birds are fully as large as the gallina, which is not quite so large as the domesticated species, but as large as a good-sized fowl.

I propose for this bird the name of *Francolinus yemensis*.

## May 13, 1851.

John Edward Gray, Esq., F.R.S., in the Chair.

The following papers were read:—

### 1. OBSERVATIONS ON THE EYE OF THE MOLE, IN A LETTER ADDRESSED TO W. SPENCE, ESQ., F.R.S.

### BY JOHN DAVY, M.D., F.R.S.

In a letter with which you favoured me some weeks ago, you made mention of Schiödte's 'Faunæ Subterraneæ Specimen,' and of the interesting discoveries described in it of several species of eyeless animals, the inhabitants of caves into which the sun's rays never penetrate, and where, in utter darkness, visual organs would consequently be useless.

Reflecting on the subject, I thought it worth while to examine with some care the eyes of the common Mole, an animal that spends the greater portion of its time beneath the surface of the earth, and seems in its general organization specially adapted for a subterraneous life.

I shall chiefly notice what, in the dissections I have made, appears to be peculiar.

The first peculiarity that arrests attention is, that the eyes of the Mole are not contained in bony sockets, but lie unprotected by any bony prominences in the cellular tissue, beneath the common integuments; and, in consequence, were this animal an extinct one, and its skeleton found in a fossil state, there being no orbit, the palæontologist might be led to infer that it is a species destitute of eyes.

The next peculiarity I would mention is in regard to eye-lashes. These too it seems to be destitute of. The hair in which the eyes are buried, and by which they are defended, seems to be the common fur of the head. I could detect in that immediately surrounding them no hairs of larger dimensions, or in any respect different from those of which its fine fur is composed.

The apertures for the admission of light constitute another peculiarity. When the fur is removed from the skin surrounding the eyes, a minute aperture appears over each, about $\frac{1}{25}$th of an inch in length when closed, and, in this state, linear and straight, but circular when fully expanded. The extreme margins of these openings in the integuments being covered with fur, there is no well-marked appearance of eyelids,—indeed, it may be a question, whether the Mole, in strictness, can be said to possess these appendages. From the observations I have made, I am disposed however to infer that it does possess them, but imperfect;—imperfect, not having been able to detect beneath the marginal cutis any vestige of ciliary cartilages, and yet having found in the surrounding subcutaneous cellular tissue muscular fibres so arranged as if designed for closure, resembling an orbicular muscle, and probably designed for and performing the part of such a muscle.

As to the other muscles of the eye, one only, an abductor, was distinguishable from adjoining muscles. It is of large size comparatively, and it may be inferred powerful: by acting on it, seizing it with a forceps, and drawing it upwards, the ball of the eye was retracted, thus denoting its office. I sought in vain for other muscles. That they were not discovered, supposing them to exist, is not surprising, considering the smallness of the organ and its peculiar uninsulated position, most unfavourable for discriminating the subordinate parts pertaining to it, such as the muscles.

Relative to the constituent parts of the organs themselves, excepting their delicacy and minuteness, I am not aware of any peculiarity. The eye-ball is about $\frac{1}{25}$th of an inch in diameter; the iris dark brown; the pupil circular; the lens about $\frac{1}{163}$rd of an inch in diameter. Traces of a vitreous humour, and also of an aqueous, were observable; the former in the appearance of a cellular texture, as seen under the microscope with a high power; the latter as an exudation of moisture, a just perceptible quantity of fluid, when the ball was ruptured. From the situation of the eyes low down in the face, the optic nerves are necessarily of unusual length.

The dissections, of which I have thus briefly given the results, I need hardly remark were made chiefly under water, and with the aid of the microscope.

To return to the subject which led to the inquiry, viz. the subterraneous eyeless Fauna brought to light by the Danish naturalist, you in your letter briefly advert to the speculations which this curious discovery gives rise to, as, "whether these animals originally had eyes, and have lost them from want of use by inhabiting for ages dark caves; or, whether they were originally created without eyes, for those abodes where they have no occasion for them," &c. Allow me to ask—fully appreciating the difficulty of solving such problems—whether the preceding observations on the eyes of the Mole are not rather in favour of the latter than of the former solution? It is easy to imagine how the optic nerve and the more important parts of the organ of vision might diminish in size from little use; but it is difficult to suppose that the same circumstance could have any material effect in obliterating a cavity in bone—the eye's orbit—and, if the Mole's eyes were thus originally designed, why may not the eyeless animals have been formed in the first instance without eyes? Do not we see throughout Nature the most perfect harmony between the organic structure and the modes of life and habits of the living beings, so that the one is the true index of the other,—and that in the most minute details? Excuse my touching on these speculative questions, which, probably, from their nature, always must be speculative,—unless indeed the eyeless species are found otherwise identical with species possessing eyes, and there be found also a gradation in them, as to power and size in accordance with the degrees of light to which the individuals have been habituated, as in advancing from the open air and the entrance of the dark abodes to their deepest recesses. Also, excuse me if the matter of this letter should not be new to you.

Lesketh How, Ambleside, April 28, 1851.

P.S.—It may be deserving of mention, that notwithstanding the small size of the eye of the Mole, its appearance in fœtal development is early: thus, in a fœtus which I have recently examined, the length of which was about three-quarters of an inch, the eyes were distinct; they were visible—conspicuous in the naked face, even without the aid of a magnifying glass, and indeed were not much smaller than those of the adult, and but little different in appearance: the diameter of each was about $\frac{1}{100}$th of an inch.

## 2. NOTICE OF TWO VIVERRIDÆ FROM CEYLON, LATELY LIVING IN THE GARDENS. BY J. E. GRAY, ESQ., F.R.S. ETC.

(Mammalia, Pl. XXX., XXXI.)

The specimens here noticed were brought from Ceylon by Alex. Grace, Esq., and lived some time in the Gardens of the Society.

The first is the species which I described some years ago under the name of *Herpestes Smithii* (Mag. Nat. Hist. 1837, ii.), from a specimen which was living in the Surrey Zoological Gardens, now preserved in the Collection of the British Museum: that specimen was said to have been sent from the Cape of Good Hope, but this must have been a mistake, as it is quite unknown to Dr. Burchell, Dr. A. Smith, Mr. Smut, Dr. Wahlberg, or other zoologists who have written on the animals of South Africa.

Mr. Grace informs me that it is an inhabitant of the interior part of Ceylon. It is by far the most beautiful species of the genus, as will be seen from the accompanying illustration (Mamm., Pl. XXX.).

The second is a new species of CYNICTIS, which I propose to call

CYNICTIS MACCARTHIÆ. (Mammalia, Pl. XXXI.)

Teeth normal. Red brown; hair elongate, flaccid, pale brown, with a broad, black subterminal band, and a long whitish brown tip; of hands and feet shorter. Feet blackish brown, hair white tipped. Claws elongate, slender, compressed, especially of the two middle toes of the fore feet. Tail redder; hair elongate, one-coloured, red. Ears rounded, hairy.

*Hab.* Ceylon; Jaffna, North of Ceylon (*A. Grace, Esq.*).

This species somewhat resembles *Cynictis melanura* in general colour, but the hairs are much longer, not so adpressed, and, when the individual colour of the hair is examined, most distinct.

I have proposed to name this interesting animal after Mrs. MacCarthy, the wife of the Treasurer of the Colony and the daughter of Mr. Hawes, the Assistant Secretary to the Colonies, who is much interested in the study of natural history, and has kindly sent me several very interesting natural productions from Ceylon.

The skull differs from all the other Herpestes that I have examined, in the back of the nape being deeply and sharply notched instead of transversely truncated, the notch in the living animal being filled up with a cartilaginous septum.

## 3. Descriptions of fifty-two new species of the genus Mitra, from the Cumingian Collection.

### By Arthur Adams, F.L.S. etc.

1. **Mitra serotina**, A. Adams. *M. testá oblongo-fusiformi, acuminatá, serotiná; spirá productá, longitudinaliter plicatá, plicis confertis, undulatis; transversim sulcatá, sulcis subdistantibus; aperturá anticè dilatatá; columellá quadriplicatá, basi contortá et recurvá; labro intus lirato, margine recto, anticè subangulato.*

*Hab.* Marquesas.

A light orange species, with a produced spire, and the outer lip produced and rather angulated anteriorly.

2. **Mitra cratitia**, A. Adams. *M. testá oblongo-fusiformi, albidá, nitidá, liris elevatis transversis, acutis, et lineis elevatis, longitudinalibus, decussatim ornatá; interstitiis subtilissimè longitudinaliter striatis; aperturá intus aurantiacá; columellá plicis quinque instructá.*

*Hab.* South Africa.

The shell from which the description is taken is worn, and not in good condition, but it appears to be distinct from any species already described.

3. **Mitra straminea**, A. Adams. *M. testá oblongo-fusiformi, stramineá; anfractibus planulatis, liris transversis rugulosis, interstitiis cancellatis, suturá subcanaliculatá; aperturá oblongá, anticè subproductá; columellá plicis quatuor, basi subrecurvatá; labro intus lævi.*

*Hab.* ——?

An oblong, transversely-ridged species, rather faintly cancellated between the interstices.

4. **Mitra insignis**, A. Adams. *M. testá ovato-acuminatá; spirá acutá, lævi, nitidá, albidá; anfractibus planis, fasciá angustá albo fuscoque articulatá, ornatá; anfractu ultimo anticè transversim striato; columellá sinuatá, biplicatá, anticè incurvatá.*

*Hab.* Rains Island (*Mr. Ince*).

This is a very peculiar form, reminding one almost of the genus *Pusionella* of Gray.

5. **Mitra lævis**, A. Adams. *M. testá oblongo-fusiformi, apice acuto, lævi, nitidá, albidá; anfractibus planis, supremis cancellatis, ultimo fasciá latá transversá, rufescenti ornato; columellá plicis quatuor, supremis magnis imbricatis.*

*Hab.* Zanzibar.

A smooth *Oliva*-shaped species, with a polished surface, and a red-brown band blending into the white of the last whorl; the plates of the columella are imbricate.

6. **Mitra tigrina**, A. Adams. *M. testá oblongo-ovatá; spirá crassiusculá, apice mucronato, rufo, albo strigosá; anfractibus*

*planiusculis, transversim subsulcatis; columellâ plicis quinque; labro intus rufo.*

*Hab.* Philippines.

Several specimens of this species, all agreeing in form, were collected by Mr. Cuming; but one only retained the natural colour of the surface.

7. Mitra tiarella, A. Adams. *M. testâ oblongo-ovatâ, fuscâ, nodulis albis, ad suturas coronatâ, longitudinaliter subplicatâ, transversim liratâ, interstitiis valdè punctatis; columellâ plicis quatuor; labro margine crenulato.*

*Hab.* Island of Ticao, sandy mud, 6 fathoms.

This small, brown-coloured species is beautifully crowned, in adult specimens, with a diadem of white nodules at the suture of the whorls.

8. Mitra pigra, A. Adams. *M. testâ oblongo-fusiformi, obscuro-fuscâ, lineis pallidulis transversis prope suturas, albidâ, maculis rufis, ornatâ; lævi; spirâ acuminatâ; anfractibus septem, planulatis; aperturâ subdilatatâ, intus albâ; columellâ plicis quatuor, albis, obliquis, instructâ, anticè subintortâ.*

*Hab.* Australia.

This species partakes somewhat of the character of *M. sacerdotalis.*

9. Mitra luctuosa, A. Adams. *M. testâ oblongo-fusiformi, obscuro-fuscâ, fasciâ unicâ pallidâ transversâ ornatâ; spirâ acutâ, anfractibus planulatis, transversim liratâ; interstitiis valdè clathrato-punctatis; aperturâ oblongo-ovatâ; spirâ breviori; labio crassiusculo; columellâ plicis quatuor salientibus.*

*Hab.* China Seas.

This species was obtained during the voyage of H.M.S. Samarang.

10. Mitra insculpta, A. Adams. *M. testâ ovato-fusiformi; spirâ brevi, acutâ; aperturâ breviori; anfractibus planulatis, pallidè fuscâ, maculis rufis, longitudinalibus, variegatâ; cingillis integris, acutis, prominentibus, æquidistantibus; liris intermediis submoniliformibus; interstitiis longitudinaliter valdè sulcatis; aperturâ elongatâ; columellâ plicis tribus; labro acuto margine crenulato.*

*Hab.* Ceylon (*Dr. Gardner*).

This species also belongs to the same group as *M. cingulata.*

11. Mitra exarata, A. Adams. *M. testâ ovato-fusiformi; spirâ aperturam æquante; anfractibus subrotundis; suturâ subcanaliculatâ, olivaceâ, fasciis duabus pallidis transversis, longitudinaliter costatâ; costellis æqualibus, subdistantibus; interstitiis lineis insculptis, profundis, transversis; columellâ plicis tribus, validis, instructâ.*

*Hab.* Bais, island of Negros, coarse sand, 7 fathoms.

The most characteristic feature of this species is the sculpture between the ribs, consisting of deep, engraved, transverse lines.

12. MITRA RUFOCINCTA, A. Adams. *M. testá ovato-fusiform spirá aperturam æquante; anfractibus rotundis, sordidè albá, fasciá transversá latá rufo-fuscá; longitudinaliter costatá, costis obtusis, rotundis, distantibus; interstitiis lineis impressis transversis; aperturá subdilatatá; columellá plicis quatuor instructá; labro tenui anticè dilatato.*

*Hab.* ——?

A small, slightly-worn specimen serves for this description, but it is of peculiar form and sculpture.

13. MITRA NITIDA, A. Adams. *M. testá ovato-fusiformi; spirá aperturá breviori; anfractibus subrotundis, lævi, nitidá, badiá, anfractu ultimo anticè et posticè sulcis nonnullis transversis instructo; aperturá oblongá, anticè subdilatatá; columellá plicis quatuor; labro simplici.*

*Hab.* ——?

A small, brown, shining species, with only a few transverse spiral lines for sculpture.

14. MITRA COMPTA, A. Adams. *M. testá ovato-fusiformi; spirá aperturá longiore; anfractibus subrotundis, supernè angulatis, sordidè albá, longitudinaliter plicatá; transversim liratá, liris apud plicas nodulosis; interstitiis valdè et regulariter clathratis; anfractu ultimo anticè angustato et reflexo; columellá plicis quinque instructá; labro internè sulcato, margine crenulato.*

*Hab.* China Seas.

This species, remarkable for the strong cancellations between the longitudinal plicæ, was brought home in H.M.S. Samarang.

15. MITRA LIGATA, A. Adams. *M. testá ovato-fusiformi; spirá aperturá longiore, anfractibus planis; castaneo-fuscá, lineá unicá pallidá, transversá in medio anfractuum, longitudinaliter plicatá, transversim subliratá; columellá plicis quatuor; labro simplici, margine acuto.*

*Hab.* Pasacao, province of South Camarinas; isle of Luzon, on the sands.

The colouring of this species is very different from the allied species, and the sculpture is peculiar to many species belonging to the subgenus *Turris* of Schumacher.

16. MITRA VIBEX, A. Adams. *M. testá ovato-fusiformi; spirá aperturam æquante; anfractibus rotundis; fuscá, prope suturas pallidulá, zonulá albá angustá transversá in medio anfractuum; longitudinaliter corrugato-plicatá, transversim liratá, liris apud plicas nodulosis; interstitiis longitudinaliter striatis; anfractu ultimo angustato et anticè subreflexo; columellá plicis quatuor instructá; labro acuto.*

*Hab.* ——?

This species somewhat resembles *armillata* of Reeve, but the corrugated nature of the plicæ distinguishes it.

17. **Mitra interrupta**, A. Adams. *M. testâ ovato-fusiformi; spirâ acuminatâ; aperturâ breviori; anfractibus planis, propè suturas angulatis; albidâ, rufo-fusco variegatâ; cingulâ transversâ fuscâ moniliformi in medio anfractuum; longitudinaliter plicatâ, plicis æqualibus, obliquis, obtusis, distantibus; transversim corrugato-liratâ; interstitiis punctatis; anfractu ultimo anticè recurvato; columellâ supernè excavatâ, plicis tribus instructâ; labro simplici.*

*Hab.* North Australia.

The peculiar interrupted, dark, transverse band distinguishes this elegant species.

18. **Mitra eximia**, A. Adams. *M. testâ ovatâ; spirâ brevi, obtusâ; nitidâ, aurantiacâ, maculis triangularibus albis, cingillis lævibus, latis, transversis; interstitiis valdè longitudinaliter clathratis; aperturâ lineari-oblongâ; columellâ plicis quatuor; labro intus lævi, margine crenulato.*

*Hab.* ——?

This pretty little species belongs to the same group as *M. læta*, but the sculpture and markings are quite different, although the colour is nearly similar.

19. **Mitra multilirata**, A. Adams. *M. fusiformis, spirâ acuminatâ, aperturam æquante; anfractibus rotundatis, ad suturas angulatis; pallidè rufo-fuscâ, cingillis lævibus transversis, æquidistantibus, obtusis, ornatâ; interstitiis lineis longitudinalibus, elevatis, subconfertis, instructis; anfractu ultimo anticè producto et subreflexo; columellâ anticè truncatâ, plicis quatuor instructâ; labro intus sulcato, margine crenulato.*

*Hab.* China Seas.

This species was obtained during the voyage of H.M.S. Samarang.

20. **Mitra læta**, A. Adams. *M. testâ ovatâ, crassiusculâ, aurantiacâ, punctis albis ornatâ; longitudinaliter plicatâ; anfractibus planiusculis, transversim nodoso-liratâ; interstitiis simplicibus; columellâ plicis quinque instructâ; labro crenulato.*

*Hab.* Ticao, under stones, low water.

An oblong-ovate, shining, orange species, with scattered round white granules and regular nodulose liræ; the spire is obtuse; the whorls are flattened and longitudinally plicate.

21. **Mitra ornata**, A. Adams. *M. testâ oblongo-fusiformi, acuminatâ; spirâ acutâ; anfractibus novem, ad suturas angulatis; suturâ subcanaliculatâ; albâ, fasciis transversis rufo-fuscis ornatâ; longitudinaliter costatâ; costis regularibus, obliquis, subcrenatis; interstitiis transversim valdè clathratis; anfractu ultimo anticè subumbilicato et recurvo; columellâ plicis quatuor; labro posticè subangulato.*

*Hab.* ——?

This species is peculiar for its regular form and exactness of sculpture, as well as for its beauty of colouring.

22. **Mitra nodilirata**, A. Adams. *M. testâ oblongo-fusiformi, pallidè fulvâ, fasciâ latâ rufâ transversâ ornatâ; spirâ acuminatâ, turritâ; anfractibus octo planis, infra suturas angulatis; nitidâ, longitudinaliter plicatâ; plicis distantibus, prominentibus, obliquis, prope suturas valdè nodulosis; interstitiis lineis impressis transversis ornatis; columellâ plicis quatuor; labro acuto.*

*Hab.* ——?

An elegant form, with the pliciform ribs strongly nodulose at their hind part.

23. **Mitra pura**, A. Adams. *M. testâ fusiformi; spirâ aperturâ longiori; anfractibus subplanulatis; albâ; cingulis transversis angustis, subelevatis, crenulatis, rufo subarticulatis; liris tribus intermediis; interstitiis valdè punctatis, ornatâ; aperturâ oblongâ, anticè dilatatâ; columellâ plicis quinque; labro intus sulcato, margine crenato.*

*Hab.* ——?

An elegantly formed species, with the last whorl somewhat recurved.

24. **Mitra cingulata**, A. Adams. *M. testâ ovato-fusiformi; spirâ acutâ, aperturam æquante; anfractibus planulatis; sordidè albâ; cingillis prominentibus subcrenulatis, acutis, transversis; interstitiis longitudinaliter valdè clathratis, ornatâ; anfractu ultimo anticè producto et recurvato; columellâ plicis tribus.*

*Hab.* ——?

This species belongs to that group in which the whorls are encircled with transverse ridges.

25. **Mitra reticulata**, A. Adams. *M. testâ ovato-fusiformi; spirâ aperturâ breviori; anfractibus subrotundis; albâ; cingulis transversis, æquidistantibus, acutis, crenulatis, sulcis obliquis longitudinalibus decussatis, ornatâ; columellâ plicis quatuor; labro intus sulcato.*

*Hab.* Port Essington, 7 fathoms, sandy mud (*Jukes*).

Remarkable for the acute, crenated, transverse ridges which give the surface a reticulated appearance.

26. **Mitra asperulata**, A. Adams. *M. testâ oblongo-fusiformi, pallidè rufo-fuscâ, ad suturas albidâ, longitudinaliter sulcatâ, transversim liratâ, liris nodulis, subacutis, asperulatis; spirâ productâ; anfractibus sex, subrotundis; aperturâ spiræ dimidium æquante, anticè abruptè truncatâ; columellâ plicis tribus; labro acuto.*

*Hab.* Australia.

The transverse ridges are set with subacute nodules, which give a rough appearance to the surface.

27. **Mitra mirabilis**, A. Adams. *M. testâ fusiformi; spirâ acuminatâ, aperturâ longiori; anfractibus novem, planulatis, supernè angulatis; albâ, maculis rufis triangularibus, et punctis transverso-elongatis, rufescentibus, ornatâ; longitudinaliter plicatâ,*

*plicis obtusis, regularibus, distantibus, nodosis; nodis posticè prominentibus; cingulis transversis nodulosis, obtusis, elevatis, instructâ; anfractu ultimo in medio angustato; anticè productâ et subreflexâ; aperturâ elongatâ; columellâ plicis quatuor; labro posticè angulato, in medio inflexo, intus sulcato, margine crenulato.*

*Hab.* Socotra.

28. Mitra albina, A. Adams. *M. testâ oblongo-fusiformi, albâ; spirâ conicâ, longitudinaliter plicatâ; anfractibus subrotundatis, liris transversis ornatis; anfractu ultimo lævi, posticè subplicato, anticè sulcis transversis punctatis ornato; columellâ plicis quinque; aperturâ oblongo-lineari; labio subcalloso; labro acuto.*

*Hab.* Batangas, Isle of Luzon, on the reefs.

This *Mitra* is perfectly white, and of a very peculiar form; Mr. Cuming possesses but a single specimen.

29. Mitra amœna, A. Adams. *M. testâ oblongo-fusiformi, albâ, maculis rufis variegatâ; spirâ acuminatâ; anfractibus octo, subrotundis, carinulis transversis, lævis, elevatis, rufo-fusco articulatis, lirâ intermediâ crenulatâ, interstitiis eleganter longitudinaliter clathratis; aperturâ angustâ; columellâ plicis quinque; labro tenui, acuto.*

*Hab.* Red Sea.

This elegant species belongs to the annulated group.

30. Mitra rutila, A. Adams. *M. testâ oblongo-fusiformi, acuminatâ, aurantiacâ, maculis albis sparsis ornatâ, fasciis pallidis transversis prope suturas, suturis maculis aurantiacis maculatis; spirâ productâ, acutâ; anfractibus septem, transversim liratâ; anfractu ultimo liris anticè distinctioribus; aperturâ dilatatâ; columellâ plicis quatuor; labro acuto, anticè crenato.*

*Hab.* ——?

31. Mitra delicata, A. Adams. *M. testâ ovato-fusiformi; spirâ aperturâ longiore; anfractibus planis; suturâ subcanaliculatâ, sordidè albâ, fasciis transversis duabus pallidis; longitudinaliter plicatâ, plicis angustis, acutis, crenulatis, interstitiis transversim clathratis, anfractu ultimo anticè angustato et recurvato; columellâ plicis quatuor; labro margine acuto, crenulato.*

*Hab.* Cape York, 8 fathoms (*Jukes*).

A species of great delicacy, both of colour and sculpture.

32. Mitra rufescens, A. Adams. *M. testâ ovato-fusiformi; spirâ acuminatâ, sordidè albâ, rufo variegatâ, cingillis transversis, acutis, subdistantibus, liris duabus intermediis, interstitiis longitudinaliter valdè sulcatis, sulcis subdistantibus; columellâ anticè tortuosâ, plicis quatuor obliquis instructâ; labro internè sulcato, margine crenato.*

*Hab.* China Seas.

This species, obtained during the voyage of H.M.S. Samarang, partakes of the same kind of sculpture as *M. annulata* and others, for which Swainson has formed a subgenus.

33. **Mitra formosa**, A. Adams. *M. testá oblongo-fusiformi, albo rufoque eleganter variegatá; spirá acutá; anfractibus* 8, *rotundis, ad suturas subangulatis, cingillis transversis nodulosis ornatá, nodulis subquadratis, in seriebus regularibus; aperturá spirá breviore; columellá plicis quatuor; labro acuto, margine crenato.*
*Hab.* Marquesas (*Rohr*).
A very handsome species, entirely covered with close-set granules arranged in transverse rows.

34. **Mitra sacerdotalis**, A. Adams. *M. testá oblongo-fusiformi; spirá acuminatá; anfractibus novem, subplanulatis; fulvá, lineis fuscis transversis ornatá, prope suturas albidá, rufo maculosá; lævi, sulcis distantibus, transversis insculptá; anfractu ultimo basi recurvatá; aperturá spiræ dimidium æquante, recurvatá et anticè truncatá; columellá plicis quatuor, obliquis; labro albo, acuto, anticè rotundato.*
*Hab.* Australia.
A fine species of a peculiar character, both as regards form, colour and sculpture.

35. **Mitra macrospira**, A. Adams. *M. testá pyramidali-turritá; spirá valdè productá, albidá, maculis rufis irregularibus ornatá; anfractibus planis, longitudinaliter costellatá, costellis lævibus subconfertis, interstitiis clathrato-punctatis; anfractu ultimo anticè angustato, basi subrecurvo; columellá plicis quinque; labro intus lirato, margine acuto, anticè producto subangulato.*
*Hab.* ——?
A whitish species with a produced acuminate spire, and the short aperture with the base narrowed; the outer lip dilated anteriorly.

36. **Mitra bellula**, A. Adams. *M. testá oblongo-fusiformi, albá, nitidá, maculis rufis moniliformibus ad suturas ornatá; transversim sulcatá; anfractibus planis, supremis cancellatis; aperturá angustá, anticè productá, contortá, et recurvá; columellá plicis quatuor instructá.*
*Hab.* Isle of Capul, on the reefs, low water.
A small, transversely grooved, polished species, with a necklace-like row of reddish spots near the sutures.

37. **Mitra echinata**, A. Adams. *M. testá fusiformi-turritá; spirá acuminatá, albido-carneolá, ad apicem rufescente, ad basin fasciá latá transversá rufescenti ornatá; anfractibus planis, longitudinaliter costatá, costis prominentibus, prope suturas echinato-nodulosis, et infernè subnodosis, interstitiis sulcato-clathratis; labro intus lirato; columellá plicis quatuor instructá.*
*Hab.* ——?

38. **Mitra scitula**, A. Adams. *M. testá fusiformi-turritá; spirá acuminatá, anfractibus planiusculis, carneolá; punctis rufescentibus sparsim pictá; longitudinaliter costatá, costis undulatis, lævibus, subdistantibus; interstitiis valdè clathratis; aperturá*

*anticè angustatâ, basi subrecurvâ; columellâ plicis quatuor instructâ.*

*Hab.* China Seas.

A small, turreted, light-coloureds pecies, with undulating ribs and clathrated interstices.

39. Mitra marmorea, A. Adams. *M. testâ fusiformi-turritâ; spirâ acuminatâ; anfractibus planiusculis; olivaceâ, rufo-fuscâ marmoratâ, longitudinaliter costatâ, costis lævibus, crassis, supernè subnodosis; interstitiis transversim exaratis; columellâ plicis quinque; basi subcontortâ et recurvâ.*

*Hab.* Tambay, Isle of Negros, coarse sand, 10 fathoms.

Greenish, marbled with fuscous; ribs flat and broad; interstices with transverse engraved lines.

40. Mitra turricula, A. Adams. *M. testâ fusiformi-turritâ, albâ, carneo sparsim pictâ, anfractibus supernè angulatis; longitudinaliter costatâ, costis crassis, lævibus, distantibus, supra nodosis, interstitiis sulcato-clathratis; aperturâ spiram æquante; columellâ plicis quatuor, supremis duabus duplicatis; basi vix recurvâ.*

*Hab.* ——?

A small, elegant, turreted species, with smooth, thick ribs, and the interstices punctate-clathrate.

41. Mitra pallida, A. Adams. *M. testâ turrito-fusiformi; spirâ productâ, acuminatâ; anfractibus convexiusculis; albidâ, sparsim rufo-fusco pictâ, longitudinaliter costatâ, costis nodulosis, interstitiis clathrato-punctatis; aperturâ brevi, anticè angustatâ, basi productâ, tortuosâ et recurvâ; columellâ quadriplicatâ.*

*Hab.* Marquesas.

A delicate, small, pale species, with scattered red-brown blotches, and with the interstices between the ribs clathrate-punctate.

42. Mitra Jukesii, A. Adams. *M. testâ ovato-fusiformi; spirâ acutâ, aperturæ dimidium æquante; anfractibus planis, prope suturas angulatis; albidâ, fasciis castaneis transversis ornatâ; transversim sulcatâ, sulcis, prope suturas, profundioribus; longitudinaliter plicatâ, plicis obtusis, distantibus, prope suturas nodulosis; columellâ plicis quatuor instructâ; labro intus lævi.*

*Hab.* North Australia (*Jukes*).

This species is intermediate between *M. corrugata* and *M. vulpecula*, but is distinct from both.

43. Mitra creniplicata, A. Adams. *M. testâ ovato-fusiformi; spirâ acuminatâ; anfractibus planulatis; brunneâ, longitudinaliter plicatâ, plicis crenatis tenuibus; transversim liratâ, liris æqualibus, confertis, nodulosis ad plicas; aperturâ spiram æquante: labio posticè calloso, anticè dilatato; columellâ plicis quatuor instructâ; labro intus dentato-lirato, margine incrassato.*

*Hab.* ——?

This species belongs to the group named by Mr. Gray *Zierliana*.

44. **Mitra crenilabris**, A. Adams. *M. testâ fusiformi; spirâ aperturam æquante; anfractibus planis; fulvâ, longitudinaliter substriatâ, transversim sulcatâ; aperturâ oblongâ, anticè dilatatâ; columellâ plicis quatuor, anticè incurvatâ; labro, in medio, recto, margine crenato et incrassato.*

*Hab.* ——?

This *Mitra* resembles in many particulars *M. fulva*, Reeve, but in all the specimens I have seen the outer lip is thin and smooth in that species.

45. **Mitra castanea**, A. Adams. *M. testâ ovato-fusiformi; spirâ productâ; anfractibus rotundatis; castaneâ, nitidâ, transversim punctato-striatâ; aperturâ quàm spira breviore, anticè dilatatâ; columellâ plicis quinque.*

*Hab.* ——?

This species most closely resembles *M. badia*, Reeve, but the whorls are rounded, and it differs in other particulars.

46. **Mitra dichroma**, A. Adams. *M. testâ ovato-fusiformi; spirâ acuminatâ; anfractibus planis; suturâ canaliculatâ, anticè castaneo-fuscâ, posticè albidâ; longitudinaliter substriatâ, transversim sulcatâ, sulcis anticè profundis, aperturâ anticè dilatatâ; columellâ plicis quinque instructâ, anticè productâ; labro intus lirato, margine crenulato.*

*Hab.* ——?

47. **Mitra dealbata**, A. Adams. *M. testâ ovato-fusiformi; spirâ apice cancellato; anfractibus planulatis; suturâ profundâ, albâ, transversim sulcatâ, sulcis distantibus; aperturâ oblongâ, anticè dilatatâ; columellâ posticè excavatâ; plicis sex; labro anticè dilatato, intus lirato.*

*Hab.* ——?

This species somewhat resembles *M. crenilabris* in form, but it is much more slender, and the sculpture is different.

48. **Mitra nodulifera**, A. Adams. *M. testâ turritâ, fusiformi; spirâ quàm apertura longiore; anfractibus, prope suturas, angulatis; albidâ, longitudinaliter plicatâ, plicis, ad suturas, nodulosis, prominentibus, distantibus; transversim liratâ, interstitiis longitudinaliter striatis; aperturâ intus fulvâ, posticè angulatâ; columellâ plicis quatuor; labro margine flexuoso.*

*Hab.* ——?

A small species, somewhat resembling *M. cymelium*, Reeve, but without the transverse black lines.

49. **Mitra Mariæ**, A. Adams. *M. testâ ovato-conicâ; spirâ acuminatâ; anfractibus planis, cingulis tribus, transversis, acutis, elevatis, interstitiis longitudinaliter profundè sulcatis, instructis; posticè albâ, anticè hepaticâ, reticulationibus albis punctisque rufo-fuscis, ornatâ; anfractu ultimo, sulcis transversis, interstitiis*

*simplicibus; columellâ plicis quinque instructâ; labro intus sulcato, margine crenulato.*

*Hab.* Eastern Seas.

Somewhat like *M. incisa*, but of very different form and colour.

50. Mitra pusilla, A. Adams. *M. testâ ovato-fusiformi; spirâ turritâ, elongatâ; anfractibus subrotundatis; albidâ, fasciâ latâ transversâ, carneolâ, anticè ornatâ; longitudinaliter costatâ, costis regularibus, æqualibus, subconfertis, interstitiis transversim valdè sulcatis; aperturâ brevi; columellâ plicis quatuor.*

*Hab.* ——?

A small species, with a single, transverse, faint pink band at the fore part of the last whorl.

51. Mitra columbellina, A. Adams. *M. testâ ovato-fusiformi; spirâ brevi, acutâ; anfractibus subrotundatis, albo castaneoque concinnè pictâ, transversim evanidè sulcatâ; aperturâ ovato-oblongâ, anticè dilatatâ; columellâ plicis quatuor; labro intus lævi.*

*Hab.* ——?

This species is very prettily painted with white and dark chestnut-brown, and in form somewhat resembles a *Columbella*.

52. Mitra Philippinarum, A. Adams. *M. testâ ovato-fusiformi; spirâ brevi, acuminatâ; anfractibus planulatis, cinereâ, flammulis rufo-fuscis, longitudinalibus, variegatâ; transversim sulcatâ, sulcis regularibus, subdistantibus, profundis; aperturâ lineari-oblongâ, intus fuscâ; columellâ plicis sex; labro margine albo, crenato.*

*Hab.* Philippines.

This species is figured in Mr. Reeve's Monograph as *M. flammea* of Quoy, the original type of which, however, Mr. Cuming possesses, and it is entirely different.

## May 27, 1851.

W. Yarrell, Esq., V.P.L.S., in the Chair.

The following communications were received and read:—

### 1. NOTICE OF THE BIRDS OF MADEIRA, IN A LETTER ADDRESSED TO THE SECRETARY.

By Edward Vernon Harcourt, Esq.

Sir,—According to your request, I send you a short account of the birds that breed in Madeira, together with a list of those that visit the island.

The birds of Madeira are less numerous than might be expected in so genial a climate, and most of them are merely varieties, where they differ from European species.

The birds that breed in Madeira are these :—

| | *Latin Name.* | *English Name.* | *Portuguese Name.* |
|---|---|---|---|
| 1. | Falco Tinnunculus, *Linn.* | Kestrel. | Francelho. |
| 2. | —— Buteo, *Linn.* | Buzzard. | Manta. |
| 3. | Strix flammea, *Linn.* | Barn Owl. | Coruja. |
| 4. | Turdus Merula, *Linn.* | Blackbird. | Mérlo-preto. |
| 5. | Sylvia Rubecula, *Lath.* | Redbreast. | Papinho. |
| 6. | —— atricapilla, *Lath.* | Black-cap Warbler. | Tinto-Negro. |
| | (Curruca Heinekeni, *Jard.*) | Variety of the former. | Tinto-Negro de Capello. |
| 7. | Curruca conspicillata, *Gould.* | Spectacle Warbler. | None. |
| 8. | Regulus —— ? | —— ? | Abibe. |
| 9. | Motacilla boarula, *Linn.* | Grey Wagtail. | Lavandeira amarella. |
| 10. | Anthus pratensis, *Bechst.* | Meadow Pipit. | Corre de Caminho. |
| 11. | Fringilla butyracea, *Linn.* | Green or Wild Canary. | Canario. |
| 12. | —— Carduelis, *Linn.* | Goldfinch. | Pinta Silva. |
| 13. | —— Petronia, *Linn.* | Ring Sparrow. | Pardao. |
| 14. | —— Tintillon, *Webb & Berthelot.* | Buff-breasted Chaffinch. | Tentilhao. |
| 15. | —— cannabina, *Linn.* | Greater Redpole or Linnet. | Tinto roxo. |
| 16. | Cypselus unicolor, *Jard.* | Lesser Swift. | Andorinha da Serra. |
| 17. | —— murarius, *Temm.* | Common Swift. | —— do Mar. |
| 18. | Columba Trocaz, *Hein.* | Long-toed Wood-Pigeon. | Trocaz. |
| 19. | —— Palumbus, *Linn.* | Ring-dove. | Pombo. |
| 20. | —— Livia, *Briss.* | Rock-pigeon. | Pombinho. |
| 21. | Perdix rubra, *Briss.* | Red-legged Partridge. | Perdix. |
| 22. | —— Coturnix, *Lath.* | Quail. | Cordonez. |
| 23. | Scolopax Rusticola, *Linn.* | Woodcock. | Gallinhola. |
| 24. | Sterna Hirundo, *Linn.* | Tern. | Garajao. |
| 25. | Larus argentatus, *Brunn.* | Herring Gull. | Gaio, Guivata (after 3rd aut. moult). |
| 26. | Procellaria Puffinus, *Linn.* | Cinereous Shearwater. | Cagarra. |
| 27. | —— Anglorum, *Temm.* | Manks Shearwater. | Boeiro. |
| 28. | —— obscura, *Gmel.* | Dusky Petrel. | Pintainho. |
| 29. | —— anginho, *Hein.*<br>—— Bulwerii, *Jard.* | Angel Petrel.<br>Bulwer's Petrel. | Anginho. |
| 30. | —— ? | —— ? | Roque de Castro. |

The Kestrels are very numerous and very tame, perching on the roofs of houses, from whence they dart frequently at canary-birds hanging in their reed cages outside the windows, and they generally succeed in securing their prey; they live principally on lizards, grasshoppers, and mice.

The Buzzard is seldom seen about the town, but confines his flights to the highest mountains, feeding on small birds, insects, and reptiles.

The Barn Owl inhabits the ravines in small numbers; it is a little darker than the British Owl. It may be remarked that all the birds of Madeira are darker than their European brethren.

The Redbreast is very common; it is frequently caged, and seems to flourish in captivity.

The Blackbird, which in some parts is very plentiful, does not differ from the English bird.

The Black-cap Warbler, which is here the most domestic songster, has been sometimes called the Madeira Nightingale; there is a fulness in its warble which in a degree justifies such praise. A Madeiran variety of this bird has been described by Sir William Jardine* as a new species, under the name of *Curruca Heinekeni*; Dr. Heineken, however, in his paper on the subject in the 'Zoological Journal,' No. xvii. Art. xvii., disproves the supposition of its being a distinct species, and I am able to confirm the view that Dr. Heineken takes of it. The popular belief amongst the natives is, that where the nest of a "Tinto Negro" contains five eggs, the fifth always turns out a "Tinto Negro de Capello." The variety is much prized; for where you could buy a common "Tinto Negro" for sixpence or a shilling, you would be asked eight or ten shillings for a "Tinto Negro de Capello." The size of the two birds is precisely the same in all particulars; the chief difference consists in the black cap in the variety being extended to the shoulders, and I have sometimes seen the black extended over all the under parts: the under parts are generally much the same as those of the common female Black-cap, and the upper parts as those of the common male.

The Wren is one of the prettiest feathered inhabitants of Madeira; it lives amongst the laurel forests, in the less frequented parts of the island. It seems intermediate between the Gold and Fire-crested Wrens of Britain, and is a little larger and brighter than either.

The Spectacle Warbler is very locally distributed; it is found in brakes and bushes in some of the unfrequented parts.

The Grey Wagtail is very common, frequenting the cisterns attached to houses, as well as the streams; where, from its familiar habits amongst the washerwomen, it has been admitted in Madeiran phraseology into the ranks of the sisterhood, under the title of "Lavandeira."

The Meadow Pipit is plentifully found on the cliffs and fields near the sea, and on the serras.

The Green Canary is the original stock of the bird so well known to us as the Yellow Canary; it flies about in large flocks, with linnets and other birds, and is easily distinguished by its song, which is the same as that of the captive variety. The price of a good singing canary, either in Madeira or the Canary islands, varies from five to nine shillings, so that in fact it may be bought much cheaper in London. This bird has been admirably described by Dr. Heineken, in the 'Zoological Journal,' No. xvii. Art. xvii.

The Goldfinch is very common, and differs in no respect from our own.

The Ring Sparrow here takes the place, in a way, of our House Sparrow: it is universal; on the bleak serras, near houses, on the rocks by the sea; there is no place that it does not frequent. It differs thus in habits, though in nothing else, from the Ring Sparrow of Europe.

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* Edinb. Journ. of Nat. and Geog. Science, Jan. 1830, vol. i. p. 243.

The Chaffinch of Madeira is nearly identical with the bird figured, under the name of "*Fringilla Tintillon,*" in Webb and Berthelot's work on the Canary islands.

The Greater Redpole is very abundantly met with; it differs from the English Linnet in retaining its carmine colouring through the year.

The Lesser Swift is mentioned in Brewster's 'Journal,' by Dr. Heineken, under the title of "Black-chinned Swift." This property is however by no means general amongst the species: I have several in my possession with the chin fully as white as that of the common Swift. One of the chief differences is in size, the '*unicolor*' being much the smallest. The tail is forked about an inch and a half, and the plumage is rather darker than that of the common Swift.

The common Swift is not quite so plentiful as the Lesser Swift. Both species remain in the island throughout the year; their nests are built in the cliffs; their habits vary from those of Swifts in England; here they seem to take the place of the Swallow, hunting and skimming along the ground in a manner that would appear very degrading to their northern brethren.

The Ring-dove appears to be rather larger than the English bird; in other respects it is similar. It lives in the forests on the north side of the island.

The Long-toed Wood Pigeon has been described by Dr. Heineken, in 'Brewster's Journal,' under the name of "*Columba Trocaz*;" it is about an inch longer than the Madeiran Ring-dove; one of its chief peculiarities, and which seems to have escaped observation, is the great length of its centre toe, being more than an inch longer than that of the Ring-dove; it has a silvery ring all round its neck; it is darker in its general plumage than the Ring-dove, and is excellent eating. It inhabits the forests on the north side of the island, feeding upon grasses and the acorns of the laurel-trees.

The Rock Pigeon inhabits the sea cliffs, and rocks in the ravines all over the island. There is a variety here which is darker in its plumage and in the colour of its feet than the common Rock Pigeon.

The Red-legged Partridge is shot on the serras.

The Quail is more plentiful than the Partridge, and approaches nearer to the habitations of man; it pairs, laying about sixteen eggs, and has three or four broods in the season.

The Woodcock is found chiefly in the west, and on the Paul da Serra, sometimes plentifully. It is a large bird, but I think of inferior flavour; it breeds in the island, and is met with throughout the year.

The Tern appears chiefly at the Dezerta islands and at Point São Lourenço.

The Herring Gull is common everywhere; Dr. Renton says it is quicker by some months in obtaining its mature plumage than with us.

The Cinereous Shearwater breeds plentifully on the Dezerta islands; its cry, whether on the wing or on shore, is very remarkable; the natives salt it and consider it eatable.

The Manks Shearwater is also very plentiful at the Dezertas; it is easily distinguished from the Dusky Petrel, which is another inhabitant of the Dezertas, by its superior size, and by the colour of its feet. In the Dusky Petrel the feet are bluish ash-colour, and in the Manks Shearwater flesh-colour; in the Dusky Petrel all the secretions are green, and in the Manks Shearwater yellow. The Dusky Petrel is a very tame bird, and will live upon almost anything; it runs along the ground on its belly, and uses its curious-shaped bill in climbing up the rocks.

The Angel Petrel of Heineken has the tail slightly forked, and differs from the other smaller Petrels in having no white about the rump or flanks; it is entirely uniform black; it is very common on the Dezerta islands; when approached it emits a highly offensive matter.

The Bulwer's Petrel, as described by Sir Wm. Jardine[†], I never saw at Madeira, nor have I ever met with any one that has seen it there. Sir Wm. Jardine says, "it is easily distinguished from any other, by having the two centre tail-feathers elongated, as in the genus *Lestris*, and not even or forked, like the other Petrels." It is probably identical with the Angel Petrel.

There is another Petrel, called by the natives "Roque de Castro," pronounced "Roque de Crasto," which differs from any I have ever seen described; it approaches perhaps nearer to Leach's Petrel than any other, though the shape of the bill alone is sufficient to separate it from that species. It is common on the Dezerta islands, where it breeds, though it is by no means so abundant as the Angel Petrel.

The following is a list of the stragglers found in Madeira:—

| | *Latin Name.* | *English Name.* | *Authority*[‡]. |
|---|---|---|---|
| 31. | Cathartes percnopterus, *Temm.* | Egyptian Vulture. | * * * |
| 32. | Falco nisus, *Linn.* | Sparrow Hawk. | * * * |
| 33. | Corvus corax, *Linn.* | Raven. | * * * |
| 34. | —— corone, *Linn.* | Carrion Crow. | Mr. Lowe. |
| 35. | Oriolus galbula, *Linn.* | Golden Oriole. | * * * |
| 36. | Sturnus vulgaris, *Linn.* | Common Starling. | * * * |
| 37. | Turdus iliacus, *Linn.* | Redwing. | Mr. Lowe. |
| 38. | —— musicus, *Linn.* | Common Thrush. | Mr. Penfold. |
| 39. | Sylvia hortensis, *Lath.* | Greater Petty-chaps. | Mr. Penfold. |
| 40. | Troglodytes europæus, *Selb.* | Common Wren. | Mr. Lowe. |
| 41. | Motacilla alba, *Linn.* | Pied Wagtail. | * * * |
| 42. | Alauda arvensis, *Linn.* | Skylark. | Mr. Lowe. |
| 43. | Fringilla chloris, *Linn.* | Green Grosbeak. | * * * |
| 44. | —— domestica, *Linn.* | Common Sparrow. | Mr. Penfold. |
| 45. | Cuculus canorus, *Linn.* | Cuckoo. | * * * |
| 46. | Musophaga africana, *Temm.* | African Bee-eater. | Mr. Lowe. |
| 47. | Upupa epops, *Linn.* | Hoopoe. | * * * |
| 48. | Merops apiaster, *Linn.* | Bee-eater. | Mr. Lowe. |
| 49. | Alcedo ispida, *Linn.* | King-fisher. | Mr. Lowe. |

[†] Sir W. Jardine on the Birds of Madeira, 'Edinb. Journ. of Nat. and Geog. Science,' Jan. 1830, p. 245, and 'Illustrations of Ornithology,' by Jardine and Selby.

[‡] Where there are stars it is on my own authority.

| | *Latin Name.* | *English Name.* | *Authority*†. |
|---|---|---|---|
| 50. | Hirundo urbica, *Linn.* | House Martin. | * * * |
| 51. | —— rustica, *Linn.* | Chimney Swallow. | * * * |
| 52. | —— riparia, *Linn.* | Bank Martin. | Doubtful. |
| 53. | Caprimulgus europæus, *Linn.* | European Goatsucker. | Mr. Hinton. |
| 54. | Columba œnas, *Linn.* | Stock-dove. | Mr. Lowe. |
| 55. | —— Turtur, *Linn.* | Turtle-dove. | * * * |
| 56. | Œdicnemus crepitans, *Temm.* | Thick-knee. | Mr. Lowe. |
| 57. | Calidris arenaria, *Ill.* | Sanderling. | Mr. Lowe. |
| 58. | Vanellus cristatus, *Meyer.* | Crested Lapwing. | * * * |
| 59. | Charadrius hiaticula, *Linn.* | Ringed Plover. | Mr. Lowe. |
| 60. | —— pluvialis. | Golden Plover. | Mr. Hewitt. |
| 61. | Strepsilas interpres, *Leach.* | Turnstone. | Mr. Lowe. |
| 62. | Ciconia nigra, *Temm.* | Black Stork. | Mr. Lowe. |
| 63. | ? Ardea cinerea. | Common Heron. | * * * |
| 64. | Ardea russata, *Wagler.* | Buff-backed Heron. | * * * |
| 65. | —— purpurea, *Linn.* | Purple Heron. | * * * |
| 66. | —— minuta, *Linn.* | Little Bittern. | * * * |
| 67. | —— stellaris, *Linn.* | Common Bittern. | Mr. Lowe. |
| 68. | —— nycticorax, *Linn.* | Night Heron. | * * * |
| 69. | Limosa melanura, *Leisler.* | Black-tailed Godwit. | * * * |
| 70. | Numenius arquata, *Lath.* | Common Curlew. | Mr. Hinton. |
| 71. | —— phæopus, *Temm.* | Whimbrel. | Mr. Lowe. |
| 72. | Tringa pugnax, *Linn.* | Ruff. | * * * |
| 73. | —— subarquata, *Temm.* | Pigmy Curlew. | Mr. Lowe. |
| 74. | —— variabilis, *Meyer.* | Dunlin. | * * * |
| 75. | —— cinerea, *Temm.* | Knot. | Mr. Lowe. |
| 76. | Totanus hypoleucos. | Sandpiper. | * * * |
| 77. | —— glottis, *Bechst.* | Greenshank. | * * * |
| 78. | Scolopax gallinago, *Linn.* | Common Snipe. | Mr. Hinton. |
| 79. | —— major, *Temm.* | Great Snipe. | * * * |
| 80. | Crex Baillonii, *Temm.* | Baillon's Crake. | * * * |
| 81. | Gallinula chloropus, *Lath.* | Gallinule. | * * * |
| 82. | Ortygometra crex, *Temm.* | Land-rail. | Mr. Lowe. |
| 83. | Fulica atra, *Linn.* | Coot. | * * * |
| 84. | Anser segetum, *Steph.* | Bean Goose. | * * * |
| 85. | Mareca penelope, *Selb.* | Wigeon. | Mr. Penfold. |
| 86. | Anas crecca, *Linn.* | Teal. | * * * |
| 87. | —— boschas, *Linn.* | Mallard. | Mr. Penfold. |
| 88. | Sterna nigra, *Linn.* | Black Tern. | Mr. Lowe. |
| 89. | —— Dougallii, *Mont.* | Roseate Tern. | Sir W. Jardine. |
| 90. | Larus tridactylus, *Lath.* | Kittiwake. | * * * |
| 91. | Lestris cataractes, *Temm.* | Skua. | * * * |
| 92. | Colymbus glacialis, *Linn.* | Northern Diver. | * * * |
| 93. | Sula alba, *Temm.* | Gannet. | Mr. Lowe. |
| 94. | Procellaria Leachii, *Temm.* | Leach's Petrel. | Sir W. Jardine. |
| 95. | —— pelagica, *Linn.* | Stormy Petrel. | Doubtful. |

I have the honour to remain, Sir,

Yours, &c.,

EDWARD VERNON HARCOURT.

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† Where there are stars it is on my own authority.

## 2. Description of new Land Shells from the Collection of H. Cuming, Esq. By Dr. L. Pfeiffer.

1. Helix audebardi, Pfr. *H. testá imperforatá, conoideo-globosá, solidulá, nitidá, castaneo-fulvá, strigis saturatioribus confertis ornatá; spirá conoideá, apice obtusiusculá, albidá; anfractibus $5\frac{1}{2}$ convexis, summis granulatis, ultimis irregulariter rugoso-striatis, ultimo inflato, anticè deflexo; columellá perdeclivi, subarcuatá, latá, planá, albá; aperturá perobliquá, truncato-ovali, intus cæruleá, nitidá; peristomate incrassato, subreflexo, albo.*

Diam. maj. 48, min. 39, alt. 35 mill.

*Hab.* St. Domingo (*Sallé*).

2. Helix albersiana, Pfr. *H. testá umbilicatá, subturbinato-depressá, tenui, acutè et confertim costatá, diaphaná, rufo-corneá; spirá subturbinatá, apice acutá; anfractibus $4\frac{1}{2}$ convexis, celeriter accrescentibus, ultimo anticè deflexo, basi juxta umbilicum angustè constricto; aperturá perobliquá, lunato-ovali; peristomate tenui, marginibus subconniventibus, dextro breviter expanso, columellari dilatato, reflexo, intus plicá obliquá, dentiformi munito.*

Diam. maj. $14\frac{1}{2}$, min. 12, alt. $8\frac{1}{2}$ mill.

*Hab.* St. Domingo (*Sallé*).

3. Helix pubescens, Pfr. *H. testá angustissimè umbilicatá, depressá, tenui, pilis mollibus, brevibus, confertis pubescente, diaphaná, lutescente; spirá vix convexá, obtusá; anfractibus 5, convexiusculis, ultimo subrotundato, altiore quam lato, non descendente; aperturá vix obliquá, rotundato-lunari; peristomate simplice, recto, margine columellari supernè breviter reflexo.*

Diam. maj. 11, min. 10, alt. 6 mill.

*Hab.* St. Domingo (*Sallé*).

4. Helix leucorhaphe, Pfr. *H. testá angustè umbilicatá, depresso-turbinatá, subtilissimè striatulá, diaphaná, luteo-corneá, fasciá angustá, cretaceá, ad suturam ornatá; spirá subturbinatá, apice obtusiusculá; anfractibus 6 planiusculis, ultimo convexiore, non descendente, basi subplanato; aperturá vix obliquá, lunari; peristomate simplice, recto, margine columellari reflexiusculo.*

Diam. maj. 10, min. 9, alt. 6 mill.

*Hab.* St. Domingo (*Sallé*).

5. Succinea dominicensis, Pfr. *S. testá ovali, solidulá, substriatá, corneo-albidá, punctis corneis irregulariter aspersá; spirá conicá, acutá; anfractibus $3\frac{1}{2}$ convexis, summis corneis, ultimo $\frac{3}{5}$ longitudinis æquante; columellá subcallosá, vix recedente; aperturá parùm obliquá, ovali, subregulari, supernè vix angulatá.*

Long. $11\frac{1}{2}$, diam. 7, alt. fere 6 mill. Apert. $7\frac{1}{2}$ mill. longa, medio $4\frac{1}{2}$ lata.

*Hab.* St. Domingo (*Sallé*).

6. Bulimus moussoni, Pfr. *B. testá perforatá, oblongo-conicá, sublævigatá (lineis impressis spiralibus obsoletis notatá), nitidulá,*

*albâ, fasciis sub 5, roseis ornatâ; spirâ conicâ, apice acutâ, rubrâ; anfractibus 6, subplanis, ultimo spirâ paulò breviore; columellâ arcuatâ, supernè subtortâ; aperturâ oblongo-ovali, intus concolore; peristomate simplice, recto, margine columellari fornicatim reflexo.*
Long. 26, diam. 12 mill. Apert. 12 mill. longa, 7 lata.
*Hab.* St. Domingo (*Sallé*).
Next allied to *B. Hondurasanus*, Pfr.

7. ACHATINA DUNKERI, Pfr. *A. testâ turritâ, tenuiusculâ, lævigatâ, pellucidâ, nitidâ, fulvescente; spirâ elongatâ, apice obtusâ; suturâ impressâ, marginatâ, obsoletè crenulatâ; anfractibus 9, vix convexiusculis, ultimo* $\frac{1}{3}$ *longitudinis non attingente; columellâ arcuatâ, altè et subverticaliter truncatâ; aperturâ subtriangulari-semiovali; peristomate simplice, margine dextro antrorsum arcuato.*
Long. 28, diam. $7\frac{1}{2}$ mill. Apert. 9 mill. longa, medio 4 lata.
*Hab.* St. Domingo (*Sallé*).

8. ACHATINA IMPRESSA, Pfr. *A. testâ oblongo-turritâ, tenui, lævigatâ, lineis impressis longitudinalibus irregulariter notatâ, fulvidâ; spirâ turritâ, apice acutiusculâ; suturâ impressâ, submarginatâ; anfractibus* $6\frac{1}{2}$ *planis, ultimo* $\frac{2}{5}$ *longitudinis subæquante; columellâ arcuatâ, basi abruptè truncatâ; aperturâ obliquâ, sinuato-ovali; peristomate simplice, margine dextro basi recedente.*
Long. $8\frac{1}{2}$, diam. $2\frac{2}{3}$ mill. Apert. 3 mill. longa, medio $1\frac{1}{2}$ lata.
*Hab.* St. Domingo (*Sallé*).

9. BALEA DOMINICENSIS, Pfr. *B. testâ subperforatâ, sinistrorsâ, turritâ, sublævigatâ, nitidâ, olivaceo-corneâ; spirâ regulariter attenuatâ, apice acutâ; anfractibus 12, convexis, ultimo infra medium subangulato; aperturâ verticali, subovali; peristomate simplice, recto, margine columellari verticali, breviter reflexo.*
Long. $11\frac{1}{2}$, diam. 3 mill. Apert. $2\frac{1}{2}$ mill. longa, $1\frac{3}{4}$ lata. (An adult.?)
*Hab.* St. Domingo (*Sallé*).

10. CYLINDRELLA MONILIFERA, Pfr. *C. testâ subrimatâ, oblongâ, solidulâ, truncatâ, confertissimè et arcuatim costulato-striatâ; opacâ, sordidè albidâ; suturâ impressâ, nodulis albidis subdistantibus notatâ; anfractibus (superst.) 9, convexis, ultimo non soluto, basi subacutè carinato; aperturâ obliquè subcirculari, ad carinam canaliculatâ; peristomate albo, reflexiusculo-expanso, supernè appresso.*
Long. 19, diam. supra medium 6 mill. Apert. cum peristomate oblique 5 mill. longa, $4\frac{1}{2}$ lata.
*Hab.* St. Domingo (*Sallé*).

11. CYLINDRELLA ADAMSIANA, Pfr. *C. testâ vix rimatâ, oblongo-pupiformi, truncatâ, nitidâ, confertè striato-punctatâ, albidâ, cornea, irregulariter strigatâ et variegatâ; suturâ lineari, albo-crenulatâ; anfractibus (superst.) 8–9, planis, ultimo angustiore, non soluto, basi cristâ compressâ, obtusâ munito; aperturâ vix*

*obliquâ, subcirculari, ad cristam subcanaliculatâ; peristomate albo, breviter expanso-reflexo, supernè interrupto.*
Long. 14–$15\frac{1}{2}$, diam. 5 mill. Apert. $4\frac{1}{4}$ mill. longa et lata.
*Hab.* St. Domingo (*Sallé*).

12. Cylindrella salleana, Pfr. *C. testâ non rimatâ, cylindraceâ, gracili, truncatâ, obliquè confertissimè costulato-striatâ, nitidâ, pallide fuscescente, vel rufo-fuscâ; anfractibus (superst.)* 17–18, *vix convexiusculis, ultimo angustiore, basi carinâ compressâ, acutâ munito, antrorsum breviter porrecto; aperturâ subobliquâ, rhombeo-rotundatâ, ad carinam distinctè canaliculatâ; peristomate albo, nitido, undique reflexiusculo-expanso.*
Long. 27, diam. (prope basin) 5 mill. Apert. cum peristomate $4\frac{2}{3}$ mill. longa et lata.
*Hab.* St. Domingo (*Sallé*).

13. Cylindrella gouldiana, Pfr. *C. testâ vix subrimatâ, turritâ, truncatâ, confertissimè costulato-striatâ, sericeâ, pallide corneâ; suturâ impressâ, subdenticulatâ; anfractibus (superst.)* 9, *convexiusculis, ultimo soluto, antrorsum breviter descendente, basi subcompresso; aperturâ subobliquâ, ferè circulari, latere dextro subangulatâ; peristomate albo, undique breviter expanso.*
Long. 10, diam. $2\frac{1}{3}$ mill. Apert. 2 mill. longa et lata.
*Hab.* St. Domingo (*Sallé*).

14. Cyclostoma orbignyi, Pfr. *C. testâ subperforatâ, elongato-pupoideâ, solidâ, confertim arcuato-striatâ, rubello-fulvâ; spirâ subcylindricâ, sensim attenuatâ, apice conicâ; suturâ profundâ; anfractibus* 8 *vix convexis, penultimo lato, ultimo fasciâ latâ violaceâ, antrorsum evanescente, ornato, basi cristâ compressâ, obtusâ munito; aperturâ circulari; peristomate incrassato, subreflexo, supernè appresso, infra cristam anfractibus penult. subexciso. Operculum tenue, albidum, extus concavum, arctispirum.*
Long. 27, diam. 9 mill.
β. *Unicolor virenti-fulvum.*
γ. *Minus, interdum omnino violaceum, anfractibus convexioribus.*
*Hab.* St. Domingo (*Sallé*).

15. Helicina versicolor, Pfr. *H. testâ depressâ, tenui, lævigatâ, citrinâ, sæpe viridi variegatâ, suturâ vel vertice purpureo; spirâ parùm elevatâ, obsoletè papillatâ; anfractibus* $4\frac{1}{2}$, *planiusculis, rapidè accrescentibus, ultimo lato, subdepresso, granticè vix descendente; aperturâ diagonali, subtriangulari-semiovali; columellâ brevissimâ, callum crassum, semicircularem, nitidum, album emittente; peristomate breviter expanso, margine basali subreflexo, immediatè in columellam continuato. Operculum tenue, submembranaceum, castaneum, margine columellari et nucleo pallidis.*
Diam. maj. 8, min. $6\frac{2}{3}$, alt. $5\frac{1}{2}$ mill.
*Hab.* St. Domingo (*Sallé*).

16. Helicina dominicensis, Pfr. *H. testâ globoso-conicâ, solidulâ, concentricè confertim striatâ, parùm nitidâ, albidâ, luteo-*

*vel fulvo-zonatâ; spirâ conicâ, acutâ; anfractibus 6, planiusculis, suturâ profundâ junctis, ultimo convexiore, vix descendente; columellâ brevissimâ, basi denticulatâ, callum emittente tenuem, vix circumscriptum; aperturâ parùm obliquâ, semiovali; peristomate acuto, subrecto. Operculum tenue, testaceum, carneum, margine columellari elevato.*

Diam. maj. $6\frac{1}{3}$, min. $5\frac{3}{4}$, alt. 5 mill.

*Hab.* St. Domingo (*Sallé*).

## 3. Contributions towards a Monograph of the Trochidæ, a family of Gasteropodous Mollusca.

By Arthur Adams, R.N., F.L.S. etc.

### Genus 1. Trochus, Linn.—*Pyramidea*, sp. Swains.

1. **Trochus niloticus**, Linn.

*Trochus niloticus*, Linn.; Gmel. p. 3565. no. 1; Chemn. Conch. v. t. 167. f. 1605, t. 168. f. 1614.—*Trochus marmoratus*, Lamk. (young).

*Hab.* North Australia (*Dring*).

2. **Trochus maximus**, Koch.

*Trochus maximus*, Koch; Phil. Abbild. Trochus, t. 6. f. 3.

*Hab.* ——?

3. **Trochus acutangulus**, Chemn.

*Trochus acutangulus*, Chemn. Conch. v. t. 163.—*Trochus conus*, Gmel.

*Hab.* Burias.

4. **Trochus spinosus**, Lamk.

*Trochus spinosus*, Lamk. Hist. An. s. Vert. t. vii. p.   .

*Hab.* ——?

5. **Trochus asperulus**, Lamk.

*Trochus asperulus*, Lamk. Hist. An. s. Vert. t. vii. p. 22.

*Hab.* ——?

6. **Trochus Cumingii**, A. Adams. *T. testâ turrito-conicâ, violaceâ, maculis viridibus pulcherrimè pictâ; anfractibus planis, cingulis, granorum moniliformibus ornatis, infernè nodoso-plicatis, anfractu ultimo angulato, peripheriâ radiatim nodo-spinosâ, basi concavâ, cingulis granulosis, insculptâ, centro profundè excavato umbilicum simulante; columellâ supernè tortuosâ, basi dente terminatâ; aperturâ tetragonâ; labro intus lirato.*

*Hab.* Sibonga, island of Zebu, under stones at low water (*H. C.*). Mus. Cuming.

7. **Trochus fastigiatus**, A. Adams. *T. testâ conicâ, imperforatâ, rubrâ, maculis albis longitudinalibus variegatâ; an-*

*fractibus planis, in medio concavis, supernè cingulis tribus nodulorum ornatis, ad suturam nodis subspinosis instructis, basi planâ, concentricè liratâ; liris crenulatis; columellâ posticè canaliculatâ, anticè truncatâ; labro in medio angulato.*
*Hab.* ——?

Genus 2. Cardinalia, Gray. *Pyramidea*, Swains.

1. Cardinalia virgata, Gmel.
*Trochus virgatus*, Gmel. p. 3580. no. 83.
*Hab.* ——?

Genus 3. Pyramis, Chemn.
*Tectus*, Montf.—*Pyramidea*, sp. Swains.

1. Pyramis dentatus, Forskal.
*Trochus dentatus*, Forsk. Egypt. Desc. Anim. p. 125. no. 67.—*Trochus foveolatus*, Gmel.
*Hab.* Port Essington (*Jukes*).

2. Pyramis noduliferus, Lamk.
*Trochus noduliferus*, Lamk. Hist. An. s. Vert. t. vii. p. 18.
*Hab.* Mindanao and Madagascar.

3. Pyramis cærulescens, Lamk.
*Trochus cærulescens*, Lamk. Hist. An. s. Vert. t. vii. p. 18.
*Hab.* ——?

4. Pyramis obeliscus, Gmel.
*Trochus obeliscus*, Gmel. p. 3579.—*Trochus pyramis*, Chemn.
*Hab.* Bolinao, island of Luzon, on the reefs (*H. C.*).

5. Pyramis acutus, Lamk.
*Trochus acutus*, Lamk. Hist. An. s. Vert. t. vii. p. 23.
*Hab.* Ticao, on the reefs.

6. Pyramis triserialis, Lamk.
*Trochus triserialis*, Lamk. Hist. An. s. Vert. t. vii. p. 22.
*Hab.* Philippines.

7. Pyramis prasinus, Menke.
*Trochus prasinus*, Menke, Moll. Nov. Holl. sp. p. 16. no. 64.
*Hab.* Eastern Seas.

8. Pyramis mauritianus, Gmel.
*Trochus mauritianus*, Gmel. p. 3582. no. 99.
*Hab.* Capul, on the reefs.

9. Pyramis fenestratus, Gmel.
*Trochus fenestratus*, Gmel.; Chemn. Conch. v. t. 163. f. 1549-50.
*Hab.* ——?

10. PYRAMIS CRENULATUS, Lamk.

*Trochus crenulatus*, Lamk. Hist. An. s. Vert. t. vii. p. 22.
*Hab.* Guimaras, under stones (*H. C.*).

11. PYRAMIS ARCHITECTONICUS, A. Adams. *P. testâ conicâ, imperforatâ, albidâ; anfractibus planis, subimbricatis, longitudinaliter costatis, costis crassis, rotundis, subnodosis, basi planâ, liris concentricis exaratâ; columellâ brevi, tortuosâ, anticè truncatâ; labro margine fimbriato.*
*Hab.* Signet Bay, North Australia (*Dring*).

12. PYRAMIS LEUCOGASTER, A. Adams. *P. testâ conicâ, imperforatâ; spirâ acutâ, in medio tumidâ, albâ, viridi variegatâ; anfractibus planulatis, longitudinaliter corrugatis, transversim cingulis nodulosis ornatis, ad suturam nodis sulcatis fimbriatis, basi planâ, albâ, concentricè sulcatâ; columellâ brevi, valde tortuosâ; labro anticè intus lirato.*
*Hab.* ——?

### Genus 4. TEGULA, Lesson.

1. TEGULA PELLIS-SERPENTIS, Wood.

*Trochus pellis-serpentis*, Wood, Ind. Test. Suppl. pl. 5. f. 4.—*Trochus strigillatus*, Anton.
*Hab.* ——?

### Genus 5. INFUNDIBULUM, Montf.—*Carinidea*, Swains.

1. INFUNDIBULUM CONCAVUM, Linn.

*Trochus concavus*, Linn.; Chemn. v. pl. 168. f. 1620–21.
*Hab.* ——?

2. INFUNDIBULUM RADIATUM, Chemn.

*Trochus radiatus*, Chemn. v. pl. 170. f. 1640–42.
*Hab.* Zanzibar.

3. INFUNDIBULUM CARINIFERUM, Beck.

*Trochus cariniferus*, Beck; Reeve, Conch. Syst. pl. 218. f. 8.
*Hab.* Signet Bay, North Australia.

4. INFUNDIBULUM KOCHII, Phil.

*Trochus Kochii*, Phil. Abbild. Trochus, vi. t. 3. f. 8.—? *Trochus Listeri*, Wood, Ind. Test. Suppl. p. 5. f. 8.
*Hab.* ——?

5. INFUNDIBULUM DELICATULUM, Phil.

*Trochus delicatulus*, Phil. Zeit. f. Malac. 1846, July, p. 105; Chemn. v. pl. 171. f. 1669.
*Hab.* St. Elena.

6. INFUNDIBULUM SAGA, Phil.

*Trochus Saga*, Phil. Zeit. f. Malac. 1846, July, p. 103.
*Hab.* ——?

7. INFUNDIBULUM DEPRESSUM, Gmel.
*Trochus depressus*, Gmel. 3573; Chemn. Conch. v. pl. 171. f. 1668.
*Hab.* ——?

8. INFUNDIBULUM CHLOROMPHALUS, A. Adams. *I. testâ depresso-conicâ, pseudo-umbilicatâ, viridi, atro-purpureo punctatâ; anfractibus planis, cingulis confertis granorum ornatâ, basi concavâ, cingulis inæqualibus articulatis insculptâ, regione umbilicali infundibuliformi, intus viridi; columellâ supernè tortuosâ, tuberculatâ.*
*Hab.* ——?

9. INFUNDIBULUM CALIFORNICUM, A. Adams. *I. testâ depresso-conicâ, pseudo-umbilicatâ, albidâ, viridi rufoque variegatâ; anfractibus planis, supra angulatis, ultimo angulato, cingulis tuberculorum subdistantium multiformium ornatâ; interstitiis longitudinaliter obliquè costatis, basi concavâ, cingulis confertis crenulatis insculptâ, regione umbilicali infundibuliformi, viridi, lineâ albâ elevatâ cincto; columellâ supernè tortuosâ, tuberculatâ.*
*Hab.* California.

Genus 6. POLYDONTA, Schumacher.—*Lamprostoma*, Swains.

1. POLYDONTA MACULATA, Linn.
*Trochus maculatus*, Linn.; Chemn. v. pl. 168. f. 1615–18.
*Hab.* Port Essington, adhering to rocks, deep water (*Jukes*).

2. POLYDONTA INÆQUALIS, Chemn.
*Trochus inæqualis*, Chemn. v. pl. 170. f. 1635–36.—*Trochus granosus*, Lamk.
*Hab.* Philippines.

3. POLYDONTA REGIA, Chemn.
*Trochus regius*, Chemn. v. p. 170. f. 1637.
*Hab.* ——?

4. POLYDONTA TENTORIUM, Chemn.
*Trochus Tentorium*, Chemn. v. p. 169. f. 1628.
*Hab.* Philippines.

5. POLYDONTA STELLATA, Chemn.
*Trochus stellatus*, Chemn. v. pl. 169. f. 1630.
*Hab.* ——?

6. POLYDONTA VERRUCOSA, Gmel.
*Trochus verrucosus*, Gmel.; Chemn. v. pl. 170. f. 1638.—*Trochus elatus*, Lamk.
*Hab.* Zanzibar.

7. POLYDONTA COSTATA, Chemn.
*Trochus costatus*, Chemn. v. pl. 169. f. 1633–34.
*Hab.* ——?

8. Polydonta Spengleri, Chemn.
*Trochus Spengleri*, Chemn. v. pl. 169. f. 1631.
*Hab.* —— ?

9. Polydonta ochroleucos, Gmel.
*Trochus ochroleucos*, Gmel.; Chemn. v. pl. 169. f. 1629.
*Hab.* —— ?

10. Polydonta vernalis, Chemn.
*Trochus vernalis*, Chemn. v. pl. 169. f. 1625–26.—*Trochus vermis*, Gmel.—*Trochus subviridis*, Phil.
*Hab.* —— ?

11. Polydonta viridescens, Chemn.
*Trochus viridescens*, Chemn. v. pl. 170. f. 1643–44.—*Trochus viridis*, Gmel.
*Hab.* Capul, Philippines.

12. Polydonta reticulata, Wood.
*Trochus reticulatus*, Gray in Wood, Ind. Test. Suppl. pl. 6. f. 38.
*Hab.* Bencoonet, Sumatra, on the reefs (*H. C.*).

13. Polydonta lineata, Lamk.
*Trochus lineatus*, Lamk. Hist. An. s. Vert. tom. vii. p. 23.
*Hab.* Swan Point (*Dring*).

14. Polydonta Hanleyana, Reeve.
*Trochus Hanleyanus*, Reeve, Conch. Syst. t. f. —*Trochus engrainus*, Philippi.
*Hab.* Swan Point (*Dring*).

15. Polydonta tiarata, Quoy & Gaim.
*Trochus tiaratus*, Quoy & Gaim. Voy. de l'Astr. t. 64. f. 8.—*Polydonta elegans*, Gray.
*Hab.* New Zealand (*Earl*).

16. Polydonta incrassata, Lamk.
*Trochus incrassatus*, Lamk. Hist. An. s. Vert. tom. vii. p. 20; Chemn. Conch. v. p. 169. f. 1632.
*Hab.* —— ?

17. Polydonta elegantula, Wood.
*Trochus elegantulus*, Gray in Wood, Ind. Test. Suppl. p. 5. f. 9.
*Hab.* —— ?

18. Polydonta aspera, Chemn.
*Trochus asper*, Chemn. Conch. v. pl. 169. f. 1633–34.
*Hab.* Banguey, province of North Iloco, island of Luzon, on the reefs at low water (*H. C.*).

19. Polydonta concinna, Philippi.
*Trochus concinnus*, Phil. Zeit. f. Malac. 1846, July, p. 105.
*Hab.* —— ?

20. **Polydonta turris**, Phil.

*Trochus turris*, Phil. Zeit. f. Malac. 1846, July, p. 102.
*Hab.* —— ?

21. **Polydonta incarnata**, Phil.

*Trochus incarnatus*, Phil. Zeit. f. Malac. 1846, July, p. 103.
*Hab.* Suez, Red Sea.

22. **Polydonta ignobilis**, Phil.

*Trochus ignobilis*, Phil. Zeit. f. Malac. 1846, July, p. 102.
*Hab.* —— ?

23. **Polydonta pustulosa**, Phil.

*Trochus pustulosus*, Phil. Kust. Conch. Cab. pl. 44. f. 6.
*Hab.* —— ?

24. **Polydonta gibberula**, A. Adams. *P. testá elevato-conicá, in medio gibbosá, anfractu ultimo angustato; albidá, lineis roseis flammulatis radiatim pictá; anfractibus subconvexis, cingulis granosis transversis ornatá, ultimo obtusè angulato; basi convexiusculá, albá, fasciis roseis radiatim pictá; centro excavato, umbilicum mentiente; columellá supernè solutá, margine tuberculo-denticulato; labro intus lirato, infernè denticulato.*
*Hab.* Philippines.

25. **Polydonta pallidula**, A. Adams. *P. testá elevato-conicá, albidá, maculis luteolis pictá; anfractibus planis, cingulis tuberculorum ornatá, tuberculis infernè in costas excurrentibus, basi convexá, cingulis granosis ornatá, cavitate contortá umbilicum simulante; columellá supernè solutá, margine tuberculato-dentato; labro intus lirato, infernè denticulato.*
*Hab.* —— ?

26. **Polydonta corrugata**, A. Adams. *P. testá elevato-conicá, albidá, rufo-fusco variegatá; anfractibus planiusculis, sulcis transversis, sulcisque obliquis nodoso-reticulatis, infernè obliquè costatis, costis nodosis ornatis; basi planiusculá, in medio concavá, excavatá, umbilicum mentiente; columellá supernè solutá, margine tuberculato-dentato; labro intus lirato, infernè denticulato.*
*Hab.* —— ?

27. **Polydonta squamigera**, A. Adams. *P. testá elato-conicá, albidá, cinereo-viridi radiatim pictá; anfractibus planiusculis, cingulis granulorum tribus ornatis, infernè obliquè costatis, costis in spinis squamiformibus excurrentibus, basi planá striis granosis, fasciisque rufo-viridibus ornatá, centro excavato umbilicum simulante, intus albo lineis elevatis cincto; aperturá lineis acutis elevatis, transversis in faucibus instructá.*
*Hab.* —— ?

### Genus 7. PHORCUS, Risso.—*Omphalius*, Philippi.

1. PHORCUS MELALEUCOS, Jonas.

*Trochus melaleucos*, Jonas, Zeit. f. Malac. 1844, p. 169; Phil. Abbild. Trochus, t. v. f. 7.

*Hab.* ——?

2. PHORCUS OCCULTUS, Phil.

*Trochus occultus*, Phil. Abbild. p. 17. t. 5. f. 8.

*Hab.* ——?

3. PHORCUS MODESTUS, Koch.

*Trochus modestus*, Koch; Phil. Abbild. Trochus, p. 30, t. 5. f. 10.

*Hab.* ——?

4. PHORCUS VARIEGATUS, Chemn.

*Trochus variegatus*, Chemn. v. pl. 171. f. 1677.—*Trochus viridulus*, Gmel.; Wood, Ind. Test. p. 28. f. 42.—*Trochus Byronianus*, Wood.—*Trochus Brazilianus*, Menke.

*Hab.* ——?

5. PHORCUS CARNEUS, Gmel.

*Trochus carneus*, Gmel. 3574?—*Trochus indusii*, Chemn.

*Hab.* ——?

6. PHORCUS CRUCIATUS, Chemn.

*Trochus cruciatus*, Chemn. pl. 171. f. 167.

*Hab.* ——?

7. PHORCUS QUADRICOSTATUS, Wood.

*Trochus quadricostatus*, Gray in Wood, Ind. Test. Suppl. p. 5. f. 15. —*Trochus torulosus*, Phil. Abbild. t. 2. f. 12.

*Hab.* ——?

8. PHORCUS DENTATUS, Gmel.

*Turbo dentatus*, Gmel.; Chemn. Conch. v. p.  f.

*Hab.* ——?

9. PHORCUS QUADRICARINATUS, Gmel.

*Trochus quadricarinatus*, Gmel.; Chemn. ii. t. 196. f. 1892–93.—*Trochus rubro-flammulatus*, Koch.

*Hab.* ——?

10. PHORCUS UMBILICARIS, Linn.

*Trochus umbilicaris*, Linn.; Chemn. v. p.  f.  —*Trochus excavatus*, Lamk.—*Trochus cinereus*, Da Costa.

*Hab.* ——?

11. PHORCUS SCALARIS, Anton.

*Trochus scalaris*, Anton.; Phil. Abbild. Trochus, p. 18. t. 2. f. 7.

*Hab.* ——?

12. **Phorcus fuscescens**, Phil.
*Trochus fuscescens*, Phil. Abbild. Trochus, t. 3. f. 8.
*Hab.* ——?

13. **Phorcus nodicinctus**, A. Adams. *P. testâ conoideâ, umbilicatâ, fuscâ luteo variegatâ, lævi; anfractibus subplanulatis, cingulis tribus nodulosis, liris elevatis transversis ornatis, anfractu ultimo subangulato, basi convexiusculâ, lineis elevatis concentricis sculptâ, regione umbilicali albidâ; columellâ brevi, arcuatâ, basi dentibus duobus terminatâ; labro fusco marginato.*
*Hab.* ——?

14. **Phorcus granifer**, A. Adams. *P. testâ orbiculato-conicâ, fuscâ, cingulis transversis granorum distantium ornatâ, cingulis remotiusculis, interstitiis transversim liratis; anfractibus rotundatis, suturâ canaliculatâ; umbilico aperto, perspectivo; columellâ sinuatâ, basi dentibus duobus terminatâ; labro intus crenulato.*
*Hab.* ——?

15. **Phorcus liratus**, A. Adams. *P. testâ conoideâ, umbilicatâ, fuscâ, lineis pallidis undulatis ornatâ, cingulis distantioribus transversis insculptâ; columellâ sinuatâ, basi dentibus tribus terminatâ, umbilico aperto, perspectivo, peromphalo viridulo; labro intus lævi.*
*Hab.* ——?

16. **Phorcus semigranosus**, A. Adams. *P. testâ orbiculato-conoideâ, umbilicatâ, purpureo alboque variegatâ, transversim tenuiter striatâ; anfractibus planiusculis, cingulis confertis subgranosis ornatis, ultimo subangulato, basi planiusculâ, cingulis granosis insculpto; margine umbilici lineâ albâ elevatâ cincto; labio supra calloso; columellâ supernè sinuatâ, basi in tuberculis duobus terminatâ et infra tuberculos dentibus duobus instructâ; labro intus lævi, anticè callo marginato.*
*Hab.* West Indies.

17. **Phorcus californicus**, A. Adams. *P. testâ orbiculato-conicâ, profundè umbilicatâ, viridi, atro-purpureo radiatim maculatâ, liris transversis subnodulosis inæqualibus ornatâ; anfractu ultimo subangulato; basi convexiusculâ; umbilico perspectivo; labio in medio valde excavato, columellâ anticè dentatâ, intus lævi.*
*Hab.* California. Mus. Cuming.

### Genus 8. Clanculus, Montfort.

*Polydonta b.*, Schum.—*Fragella,* Swainson.—*Apiculum,* sp., Humph.—*Monodonta,* sp., Lamk.—*Otavia,* Risso (not Cantraine).

1. **Clanculus Pharaonis**, Linn.
*Trochus Pharaonis*, Linn. Syst. Nat. ed. 12. no. 584; Chemn. Conch. pl. 171. f. 1672–73.
*Hab.* ——?

2. Clanculus corallinus, Gmel.
*Trochus corallinus,* Gmel. no. 3576; Adans. Senegal, p. 183. t. 12. f. 4.—*Monodonta punicea,* Phil.
*Hab.* ——?

3. Clanculus Smithii, Wood.
*Trochus Smithii,* Gray in Wood, Ind. Test. Suppl. pl. 5. f. 20.
*Hab.* Japan.

4. Clanculus Maugeri, Wood.
*Trochus Maugeri,* Gray in Wood, Ind. Test. Suppl. pl. 5. f. 27.
*Hab.* Australia.

5. Clanculus floridus, Phil.
*Trochus clangulus,* Gray in Wood, Ind. Test. Suppl. pl. 5. f. 31.
*Hab.* New Zealand (*Jukes*).

6. Clanculus mediterraneus, Wood.
*Trochus mediterraneus,* Wood, Ind. Test. Suppl. pl. 5. f. 32.—*Monodonta Vieilloti,* Payr.—*Mon. Araonis,* Bast.
*Hab.* Naples; on rocky ground (*Philippi*).

7. Clanculus clanguloides, Wood.
*Trochus clanguloides,* Gray in Wood, Ind. Test. Suppl. pl. 6. f. 39.
*Hab.* ——?

8. Clanculus limbatus, Quoy et Gaimard.
*Trochus limbatus,* Quoy et Gaim. Voy. de l'Astrol. p. 245. pl. 63. f. 16.
*Hab.* ——?

9. Clanculus Patagonicus, d'Orbigny.
*Monodonta Patagonica,* d'Orb. Voy. dans l'Am. Mérid. t. 55. f. 2.
*Hab.* ——?

10. Clanculus Couturii, Payr.
*Monodonta Couturii,* Payr. Cat. p. 134. t. 6. f. 19, 20.
*Hab.* Malta.

11. Clanculus ringens, Menke.
*Monodonta ringens,* Menke, Moll. Nov. Holl. sp. p. 14.
*Hab.* New Holland.

12. Clanculus agrestis, Chemn.
*Trochus (Globulus) agrestis,* Chemn. Conch. p. 171. f. 1678.—*Monodonta villana,* Phil.
*Hab.* ——?

13. Clanculus Guianicus, Chemn.
*Trochus (Globulus) Guianicus,* Chemn. Conch. pl. 171. f. 1680.—*Trochus Guineensis,* Gmel.—*Trochus (Globulus) Subucula,* Chemn. (var.).
*Hab.* ——?

14. **Clanculus Jussieui**, Payr.
*Monodonta Jussieui*, Payr. Cat. pl. 6. f. 17.
*Hab*. Corsica; Languedoc; France.

15. **Clanculus turgidulus**, Brocchi.
*Trochus turgidulus*, Brocchi.
*Hab*. Corsica.

16. **Clanculus lupinus**, Menke.
*Monodonta lupina*, Menke, Moll. Nov. Holl. sp. p. 15.
*Hab*. ——?

17. **Clanculus Krausii**, Phil.
*Monodonta Krausii*, Phil. Zeit. f. Malac. 1846, July, p. 101.
*Hab*. ——?

18. **Clanculus corrugatus**, Koch.
*Trochus corrugatus*, Koch; Phil. Abbild. p. 67. Troch. t. 2. f. 7.
*Hab*. ——?

19. **Clanculus ochroleucus**, Phil.
*Trochus ochroleucus*, Phil. Zeit. f. Malac. 1846.

20. **Clanculus spadiceus**, Phil.
*Trochus spadiceus*, Phil. Zeit. f. Malac. 1846.

21. **Clanculus anus**, Phil.
*Trochus anus*, Phil. Zeit. f. Malac. 1846.

22. **Clanculus personatus**, Phil.
*Trochus personatus*, Phil. Zeit. f. Malac.
*Hab*. New Holland. Mus. Hanley.

23. **Clanculus scabrosus**, Phil.
*Trochus scabrosus*, Phil. Zeit. f. Malac. 1846.

24. **Clanculus Ludwigi**, Krauss.
*Trochus Ludwigi*, Krauss, Sudafrik Moll. t. 5. f. 33.

25. **Clanculus margaritarius**, Phil.
*Monodonta margaritaria*, Phil. Zeit. f. Malac. 1846, July, p. 100.

26. **Clanculus ormophorus**, A. Adams. *C. testá depresso-conicá, umbilicatá; anfractibus rotundatis, cingulis granorum æqualibus ornatis, cingulo primo, secundo et tertio granis fuscis albis alternantibus, quarto granis fuscis ornatis; anfractu penultimo gibboso, ultimo rotundato; umbilico crenulato; columellá callosá, subreflexá, basi dente triplicato.*
*Hab*. ——?

27. **Clanculus variegatus**, A. Adams. *C. testâ depresso-conicâ, pallidâ, rufo-fusco variegatâ; anfractibus supra tumidis, cingulis granorum ornatis; interstitiis striis obliquis longitudinalibus; anfractu ultimo acutè angulato, basi plano; umbilico crenulato; columellâ supra tortuosâ, margine reflexâ, crenulatâ, basi dente biplicato terminatâ; labro intus dentibus lamellaribus, superiore majore.*
*Hab.* Island of Siquijor, under stones (*H. C.*).

28. **Clanculus cingulifer**, A. Adams. *C. testâ elevato-conoideâ, carneolâ, cingulo albo rufoque articulato, ornatâ; anfractibus rotundatis, cingulis transversis granosis sculptis; basi concavâ, peromphalo albo roseo radiato, margine plicato; columellâ crassâ, supra nodosâ, infra uniplicatâ; basi dente triplicato terminatâ; labro intus lirato; tuberculo maximo, prope marginem superiorem.*
*Hab.* ——?

29. **Clanculus maculosus**, A. Adams. *C. testâ elevato-conoideâ, rufo-fuscâ, maculis albidis variegatâ; anfractibus rotundatis, cingulis granorum ornatis, interstitiis obliquè striatis, margine umbilici crenulato; columellâ supra tuberculo magno instructâ, basi dente biplicato terminatâ; labro intus lirato, lirâ supremâ maximâ.*
*Hab.* ——?

30. **Clanculus sulcarius**, A. Adams. *C. testâ parvâ, albidâ, fasciis fuscis radiatim ornatâ, cingulis distantioribus granorum instructâ, interstitiis longitudinaliter obliquè striatis; anfractibus parum convexis; margine umbilici crenulato; columellâ dente pliciformi; labro intus crenulato.*
*Hab.* Island of Masbate, sandy mud, 7 fathoms (*H. C.*).

31. **Clanculus acuminatus**, A. Adams. *C. testâ elevato-conicâ; spirâ acuminatâ, fuscâ, nigro-fusco punctatâ, cingulis transversis subdistantibus granorum ornatâ; interstitiis lineis transversis et longitudinalibus decussatis; margine umbilici subnoduloso; columellâ margine reflexo, integro, basi dente simplici magno terminatâ; labro intus lirato.*
*Hab.* Sibonga, island of Zebu, under stones (*H. C.*).

32. **Clanculus albinus**, A. Adams. *C. testâ conoideâ, albidâ, cingulis granorum confertis ornatâ, granis nonnullis fusco punctatis; anfractibus convexis, ultimo rotundato; margine umbilici plicato-dentato; columellâ callosâ, plicis duabus transversis, basi dente triplicato terminatâ; labro supernè inflexo, intus lirato; tuberculo magno trisulcato prope marginem superiorem.*
*Hab.* ——?

33. **Clanculus turbinoides**, A. Adams. *C. testâ turbinato-conoideâ, fuscâ, cingulis subdistantibus granorum ornatâ; interstitiis lineis transversis prominulis; anfractibus rotundatis, suturâ canaliculatâ; basi cingulis concentricis granorum instructâ;*

*umbilico dentato; columellâ sulcatâ, margine reflexâ, tuberculis quatuor; labro intus lirato.*

*Hab.* ——?

34. Clanculus stigmatarius, A. Adams. *C. testâ elevato-conicâ, cingulis confertis granorum ornatâ, lutescenti cingulo tertio et septimo granis albis et roseis subdistantibus, basi granis roseis ornatâ; umbilici margine subnodoso; columellâ crassâ, transversim subplicatâ, basi dente magno triplicato terminatâ; labro supra inflexo, intus lirato, tuberculo magno bisulcato prope marginem superiorem.*

*Hab.* Island of Corigidor, bay of Manila, coarse sand, 9 fathoms (*H. C.*).

35. Clanculus textilosus, A. Adams. *C. testâ conoideâ; spirâ acuminatâ, cingulis granorum inæqualibus ornatâ, primo, tertio et sexto coccineâ, secundo, quarto, quinto et septimo granis albis nigris alternantibus ornatâ; margine umbilici dentato; columellâ biplicatâ, margine acutâ, basi dente triplicato terminatâ; labro intus lirato, prope marginem superiorem tuberculo magno.*

*Hab.* Island of Ticao, sandy mud, 6 fathoms (*H. C.*).

36. Clanculus minor, A. Adams. *C. testâ parvâ, conicâ, albidâ, fasciis rufo-fuscis radiatim ornatâ; anfractibus planis, cingulis transversis granosis sculptâ, anfractu ultimo angulato, basi planiusculâ, margine umbilici crenulatâ; columellâ tuberculo decurvato terminatâ; labro intus lirato.*

*Hab.* Island of Masbate, sandy mud, 7 fathoms (*H. C.*).

37. Clanculus brunneus, A. Adams. *C. testâ depresso-conicâ, fuscâ, cingulis granorum subdistantibus ornatâ; interstitiis longitudinaliter elevatè striatis; anfractibus planiusculis, ultimo acutè angulato, umbilici margine planâ; columellâ transversim plicatâ, margine fimbriatâ, basi dente biplicato terminatâ; labro intus lirato, lirâ supremâ majore.*

*Hab.* ——?

38. Clanculus unedo, A. Adams. *C. testâ elevato-conoideâ; spirâ prominulâ, apice roseo, cingulis granorum confertis (in anf. ultim. quinque) ornatâ, coccineâ, cingulo secundo, quarto et quinto granis albis et nigris ornatis; umbilici margine plicato-crenulatâ; columellâ obliquâ, crassâ, margine reflexâ, basi dente magno triplicato terminatâ; labro intus lirato, supra tuberculo magno.*

*Hab.* ——?

39. Clanculus zebrides, A. Adams. *C. testâ conoideâ, fuscescenti, nigro-fusco radiatim pictâ, cingulis granorum sculptâ; interstitiis lineolis transversis elevatis; anfractibus rotundatis; umbilici margine crenulatâ; columellâ supra tuberculo, margine callosâ, basi tuberculo magno terminatâ; labro intus dentibus linearibus instructo.*

*Hab.* ——?

40. **Clanculus edentulus**, A. Adams. *C. testá orbiculato-conoideá, sordidè rufâ, albo variegatá, cingulis transversis granosis sculptâ; anfractibus parum convexis; umbilici margine subcrenulatá; columellá supra plicatá, infra edentulá, margine infra tuberculis tribus; labro intus subsulcato.*
*Hab.* ——?

41. **Clanculus nigricans**, A. Adams. *C. testá depresso-conicâ, umbilicatâ, nigricante; anfractibus planis cingulis quinque granulatis ornatâ, ultimo angulatâ, carinis planis duabus in parte inferiore, cingulis 5–6 articulatis sulcisque intermediis sculptá; umbilici margine crenulato; columellá rectá, supernè solutá, in parte superiore tuberculatá, extus tuberculis tribus instructá; labro intus lævi.*
*Hab.* ——?

42. **Clanculus carinatus**, A. Adams. *C. testâ conicâ, albidá, flammulis rubris pictá, anfractibus planis, cingulis inæqualibus confertis granorum ornatá, supra suturam angulatá, anfractu ultimo margine carinato, cariná albo rufoque articulatá; umbilici margine plano; columellá rectá, supra subcallosâ, basi dente simplici acuto terminatá; labro intus sulcato.*
*Hab.* ——?

43. **Clanculus microdon**, A. Adams. *C. testá orbiculato-conicá, fuscá, nigro-fusco maculatá, cingulis granorum ornatá; interstitiis lineis elevatis transversis; anfractibus rotundatis, basi cingulis subnodosis, rufo- et nigro-fusco articulatá; umbilici margine dentato, dente superiore majore; columellá supra flexuosá, plicatá, margine reflexo, sulcato-crenulato, basi dente parvo terminatá; labro intus lirato.*
*Hab.* ——?

44. **Clanculus omalomphalus**, A. Adams. *C. testá depresso-conicá, pallidá, fusco maculatá, anfractibus paulum rotundatis, cingulis granorum ornatá; interstitiis striis longitudinalibus, anfractu ultimo acutè carinato, cariná albo rufoque articulatá, basi planá; umbilici margine plano; columellá transversim plicatá, margine reflexo dentato, basi dente biplicato terminatá; labro intus lirato.*
*Hab.* Sydney (*Strange*).

45. **Clanculus gibbosus**, A. Adams. *C. testá depresso-conicá, pallidâ, fasciis fuscis radiatim dispositis ornatá, cingulis transversis æqualibus granosis sculptá; anfractibus rotundatis, suturá profundá, canaliculatá, anfractu ultimo gibboso, infra subangulato; umbilici margine crenulato; columellá plicatá, margine reflexo supra dentato, basi dente magno biplicato terminatá; labro intus corrugato-crenulato, supra inflexo, tuberculo magno instructo.*
*Hab.* New Ireland (*Jukes*).

46. Clanculus conspersus, A. Adams. *C. testâ orbiculato-conicâ, rufescente, albo rubroque variegatâ, cingulis moniliformibus transversis ornatâ, cingulo infra suturam majore, anfractu ultimo angulato; columellâ postice subcanaliculatâ vix tortuosâ, anticè plicâ magnâ transversâ terminatâ; labro intus valdè dentato-lirato.*
*Hab.* ——?

47. Clanculus nodiliratus, A. Adams. *C. testâ depresso-turbinatâ, carneolâ, liris transversis nodulosis subdistantibus ornatâ; interstitiis longitudinaliter tenuissimè striatis; anfractibus subquadratis, margine umbilici dentato; columellâ rectâ, anticè tuberculo parvo terminatâ; labro intus lirato.*
*Hab.* ——?

### Genus 9. Ziziphinus, Leach.

*Calliostoma,* Swains.—*Labio,* sp. Oken.—*Trochilus,* sp. Humph.

1. Ziziphinus vulgaris, Gray; Mrs. Gray, Fig. of Moll. An. p. 89.

*Trochus ziziphinus,* Linn. Syst. Nat. ed. 12. p. 1231.—*Trochus conulus,* Penn.—*Trochus zyziphinus,* Born.—*Trochus zezyphinus,* Chemn.—*Trochus discrepans,* Brown.—*Trochus Lyonsii,* Leach.—*Trochus albidus,* Wood.—*Trochus Sisyphinus,* Macgill.—*Trochus Sedgwickii,* Sow.—*Trochus conuloides,* Lamk.
*Hab.* British islands; Mediterranean; Norway, &c.

2. Ziziphinus conulus, Linn.

*Trochus conulus,* Linn. Syst. Nat. ed. 12. p. 1230.—*Trochus violaceus,* Risso.
*Hab.* British islands.

3. Ziziphinus alabastrum, Beck.

*Margarita alabastrum,* Beck; Lovén, Ind. Moll. Scandin. p. 20. —*Trochus occidentalis,* Mighels & Ad.—*Trochus formosus,* Forbes.
*Hab.* British islands.

4. Ziziphinus granulatus, Born.

*Trochus granulatus,* Born, Test. Mus. Cæs. Vind. p. 337. pl. 12. f. 9, 10.—*Trochus papillosus,* Da Costa.—*Trochus fragilis,* Pultney. —*Trochus tenuis,* Montague.
*Hab.* British islands.

5. Ziziphinus selectus, Chemn.

*Trochus selectus,* Chemn. Conch. xi. t. 196. f. 1896–97.—*Ziziphinus tigris,* Gray.
*Hab.* New Zealand.

6. Ziziphinus doliarius, Chemn.

*Trochus doliarius,* Chemn. Conch. x. t. 165. f. 1579–80.—*Ziziphinus canaliculatus,* Gray.
*Hab.* Australia; New Zealand.

7. **Ziziphinus Cunninghami**, Gray.
*Ziziphinus Cunninghami*, Gray, Brit. Mus.
*Hab.* ——?

8. **Ziziphinus annulatus**, Martyn.
*Trochus annulatus*, Martyn, Conch. i. t. 33.—*Trochus virgineus*, Gmel.
*Hab.* Monterey, California (*Hartweg*).

9. **Ziziphinus granatum**, Gmel.
*Trochus granatum*, Gmel.; Chemn. Conch. v. t. 170. f. 1654–55.
*Hab.* Australia, Port Essington (*Jukes*).

10. **Ziziphinus ornatus**, Lamk.
*Trochus ornatus*, Lamk. Hist. An. s. Vert. t. vii. p. 27.
*Hab.* ——?

11. **Ziziphinus armillatus**, Wood.
*Trochus armillatus*, Wood, Ind. Test. Suppl. pl. 5. f. 5.
*Hab.* ——?

12. **Ziziphinus interruptus**, Wood.
*Trochus interruptus*, Wood, Ind. Test. Suppl. pl. 6. f. 42.
*Hab.* ——?

13. **Ziziphinus tranquebaricus**, Chemn.
*Trochus Tranquebaricus*, Chemn. Conch. v. t. 166. f. 1595–96.
*Hab.* ——?

14. **Ziziphinus pyramis**, Gmel.
*Trochus Pyramis*, Gmel.; Chemn. Conch. v. pl. 170. f. 1652–53. —*Trochus crenulatus*, Brocc.—*Trochus Matonii*, Payr.—*Trochus punctatus*, Ren.—*Trochus conulus*, Donov.—*Trochus tricolor*, Risso.
*Hab.* ——?

15. **Ziziphinus montagui**, Gray.
*Trochus Montagui*, Gray; Wood, Ind. Test. Suppl. pl. 6. f. 43.—*Trochus striatus*, Forbes.
*Hab.* British islands.

16. **Ziziphinus indistinctus**, Wood.
*Trochus indistinctus*, Wood, Ind. Test. Suppl. pl. 6. f. 41.
*Hab.* ——?

17. **Ziziphinus pyramidatus**, Lamk.
*Trochus pyramidatus*, Lamk. Hist. An. s. Vert. t. vii. p. 30.
*Hab.* ——?

18. **Ziziphinus langieri**, Payraud.
*Trochus Langieri*, Payraud. Cat.
*Hab.* ——?

19. ZIZIPHINUS JUJUBINUS, Gmel.

*Trochus jujubinus*, Gmel.; Chemn. Conch. v. pl.  . f.  .
*Hab.* Java.

20. ZIZIPHINUS FILOSUS, Wood.

*Trochus filosus*, Wood, Ind. Test. Suppl. pl. 5. f. 23.—*Trochus castaneus*, Nuttall?—*Trochus ligatus*, Gould.
*Hab.* Straits of Juan de Fuco, Upper California.

21. ZIZIPHINUS DUBIUS, Philippi.

*Trochus dubius*, Phil. En. Moll. Sicil. ii. p. 149. t. 25. f. 7.
*Hab.* Sicily.

22. ZIZIPHINUS GEMMOSUS, Reeve.

*Trochus gemmosus*, Reeve, Proc. Zool. Soc. 1842; Conch. Syst. pl. 218. f. 9.
*Hab.* Puerto Galero, island of Mindanao, sandy mud, 6 fathoms.

23. ZIZIPHINUS EXIMIUS, Reeve.

*Trochus eximius*, Reeve, Proc. Zool. Soc. 1842; Conch. Syst. pl. 218. f. 12.
*Hab.* —— ?

24. ZIZIPHINUS ANTONII, Koch.

*Trochus Antonii*, Koch; Phil. Abbild. Trochus, p. 2. t. 1. f. 4.
*Hab.* —— ?

25. ZIZIPHINUS EXIGUUS, Pultney.

*Trochus exiguus*, Pultney Hutchins, Hist. Dorset, p. 44.—*Trochus erythroleucus*, Gmel.; Lamk.—*Trochus exasperatus*, Penn.—*Trochus erythroleucus*, Hanley.—*Trochus conulus*, Da Costa.—*Trochus minutus*, Chemn.; Dillw.
*Hab.* Mediterranean; British islands.

26. ZIZIPHINUS STRIATUS, Linn.

*Trochus striatus*, Linn. Syst. Nat. ed. 12. p. 1230.—*Trochus parvus*, Da Costa.—*Trochus conicus*, Donov.—*Trochus erythroleucus*, Maton & Rack.—*Trochus depictus*, Deshayes.—*Trochus Sartorii*, Arad & Magg.—*Trochus vittatus*, Lamk.
*Hab.* British islands.

27. ZIZIPHINUS CILIARIS, Menke.

*Trochus ciliaris*, Menke, Moll. Nov. Holl. p. 17; Phil. Abbild. Trochus, t. 7. f. 11.
*Hab.* —— ?

28. ZIZIPHINUS DECORATUS, Phil.

*Trochus decoratus*, Phil. Zeit. f. Malac. 1846, July, p. 102.
*Hab.* —— ?

29. ZIZIPHINUS LÆVIGATUS, Phil.

*Trochus lævigatus*, Phil. En. Moll. Sicil. v. 1. t. 11. f. 2.
*Hab.* Naples, rocky shores.

30. Ziziphinus strigosus, Gmel.

*Trochus strigosus*, Gmel.; Chemn. Conch. v. t. 170. f. 1651.—*Trochus callichrous*, Phil.

*Hab.* Morocco.

31. Ziziphinus luridus, Nuttall.

*Trochus luridus*, Nuttall.

*Hab.* Fayal.

32. Ziziphinus bicingulatus, Lamk.

*Trochus bicingulatus*, Lamk. Hist. An. s. Vert. tom. vii. p. 27.—*Trochus vinctus*, Phil.

*Hab.* Rains Island (*Ince*).

33. Ziziphinus millegranus, Phil.

*Trochus millegranus*, Phil. En. Moll. Sicil. v. 1. p. 183. pl. 10. f. 25.—? *Trochus Clelandi*, Wood.—*Trochus Martini*, Smith.—*Trochus miliaris*, Scacc.

*Hab.* ——?

34. Ziziphinus agrestis, Phil.

*Trochus agrestis*, Phil. Abbild. p. 33, Trochus, t. 1. f. 6.

*Hab.* Singapore, fine sand, 6 fathoms (*H. C.*).

35. Ziziphinus chlorostomus, Menke.

*Trochus chlorostomus*, Menke, Spec. Moll. Nov. Holl. p. 17; Phil. Abbild. Trochus, t. 2. f. 8.

*Hab.* New Holland.

36. Ziziphinus perspectivus, Koch.

*Trochus perspectivus*, Koch; Phil. Abbild. Trochus, p. 2. t. 1. f. 5.

*Hab.* ——?

37. Ziziphinus miniatus, Anton.

*Trochus miniatus*, Anton, Verzeich. p. 58; Phil. Abbild. Trochus, t. 1. f. 7.

*Hab.* ——?

38. Ziziphinus gilvus, Phil.

*Trochus gilvus*, Phil.

*Hab.* ——?

39. Ziziphinus metaformis, Phil.

*Trochus metaformis*, Phil.; Kust. Conch. Cab. t. 43. f. 13.

*Hab.* ——?

40. Ziziphinus zonamestus, A. Adams. *Z. testâ obliquè pyramidali, umbilicatâ, carneâ, cingulis transversis granosis permultis ornatâ; interstitiis purpurascentibus, striis obliquis longitudinalibus; anfractibus planis, supra suturas angulatis, ultimo acutè angulato, basi plano-concavâ, cingulis granulatis insculptâ; umbi-*

*lico magno, infundibuliformi, intus albo; aperturâ rhomboideâ, intus albâ; columellâ rectâ, basi truncatâ.*
*Hab.* Honduras (*Dyson*).

41. ZIZIPHINUS TICAONICUS, A. Adams. *Z. testâ elevato-conicâ, perforatâ, luteâ vel carneâ, liris transversis rufo articulatis prope suturas ornatâ; anfractibus paulum rotundatis, longitudinaliter striatis, apice atro-purpureo; anfractu ultimo subangulato, basi convexiusculâ, cingulis rufo-articulatis insculptâ; aperturâ subquadratâ; columellâ rectâ, anticè subtruncatâ; aperturâ intus albâ.*
*Hab.* Island of Ticao, sandy mud, 6 fathoms (*H. C.*).

42. ZIZIPHINUS JAPONICUS, A. Adams. *Z. testâ turrito-conicâ, lævi, nitidâ, imperforatâ; anfractibus planis, basi lineis duabus impressis, ultimo angulato, rubrâ flammulis fuscis et albidis ornatâ, basi convexâ, cingulis articulatis insculptâ; aperturâ subquadratâ, intus viride iridescenti.*
*Hab.* Japan.

43. ZIZIPHINUS ELEGANTULUS, A. Adams. *Z. testâ conicâ, imperforatâ, lutescenti; anfractibus planis, lineis elevatis distantibus granulatis moniliformibus violaceis alternis minoribus cinctâ; interstitiis longitudinaliter striatis; basi planiusculâ, cingulis quatuor violaceis ornatâ; aperturâ subquadratâ, intus albâ; columellâ basi subtruncatâ.*
*Hab.* Malacca, coral sand, 10 fathoms (*H. C.*).

44. ZIZIPHINUS DECUSSATUS, A. Adams. *Z. testâ elevato-conicâ, subperforatâ, albidâ, maculis viridibus longitudinalibus ornatâ; anfractibus planis, basi marginatis, prominulis; cingulis transversis granulatis lineisque elevatis longitudinalibus decussatè insculptâ; anfractu ultimo angulato, basi convexiusculâ, cingulis granulatis ornatâ; aperturâ subquadratâ; columellâ rectâ, basi truncatâ.*
*Hab.* Calipan, Mindoro, coarse gravel, 12 fathoms (*H. C.*).

45. ZIZIPHINUS RUBROPUNCTATUS, A. Adams. *Z. testâ parvâ, orbiculato-conicâ, lutescenti; cingulis transversis spinulosis ornatâ (in anfractu ultimo quatuor), interstitiis clathratis pulcherrimè rubro-punctulatis.*
*Hab.* ——?

46. ZIZIPHINUS UNICINCTUS, A. Adams. *Z. testâ turrito-conicâ, imperforatâ, luteolâ; anfractibus planis, subimbricatis, basi cingulis prominulis rubro-articulatis lineisque transversis confertis ornatis; anfractu ultimo angulato, basi productâ, lineis concentricis et cingulâ elevatâ articulatâ sculptâ; aperturâ subtrigonâ; columellâ rectâ, basi subcanaliculatâ.*
*Hab.* Lord Hood's Island, on pearl oysters, 8 to 10 fathoms (*H. C.*).

47. Ziziphinus nebulosus, A. Adams. *Z. testâ conoideâ, imperforatâ, rufo-fuscâ albo variegatâ; anfractibus planiusculis, cingulis inæqualibus granorum ornatâ, ultimo subangulato, basi convexiusculâ, cingulis subgranulosis rufo alboque articulatis ornatâ; aperturâ subtetragonâ; columellâ albâ, incurvatâ, basi subtruncatâ; labro intus lirato.*
*Hab.* Rains Island (*Ince*).

48. Ziziphinus picturatus, A. Adams. *Z. testâ turrito-conicâ, imperforatâ, viridi aut violaceâ, fasciis undulatis lineisque ziczaciformibus ornatâ; anfractibus planis, basi marginatis crenulatis, lineis impressis transversis sculptâ; anfractu ultimo angulato, basi convexiusculâ; aperturâ subquadratâ, intus albâ; columellâ incurvâ, basi truncatâ.*
*Hab.* Delaguete, island of Negros, sandy mud, 7 fathoms (*H. C.*).

49. Ziziphinus asperulatus, A. Adams. *Z. testâ conicâ, imperforatâ, albidâ, maculis purpureis radiatim ornatâ; anfractibus planiusculis, in medio carinatis, cingulis inæqualibus ornatâ, superioribus granulatis, inferioribus subplanis; anfractu ultimo subangulato, basi planâ, cingulis planis insculptâ; regione umbilicali depressâ, callo obtectâ; aperturâ subrotundâ; columellâ rectâ, basi truncatâ; labro intus lirato.*
*Hab.* —— ?

50. Ziziphinus polychroma, A. Adams. *Z. testâ turrito-conicâ, perforatâ, viridi, fasciis albidis undulatis, lineis luteis angulatis variè pictâ; anfractibus planis, subimbricatis; basi marginatis articulatis prominulis, lineis transversis subdistantibus impressis ornatâ, longitudinaliter substriatâ; anfractu ultimo angulato, basi convexiusculâ, cingulis luteo articulatis insculptâ; aperturâ subquadratâ, intus viridi; columellâ rectâ, basi subtruncatâ.*
*Hab.* Island of Masbate, sandy mud, 7 fathoms (*H. C.*).

51. Ziziphinus duplicatus, A. Adams. *Z. testâ turrito-conicâ, imperforatâ; anfractibus convexis cingulis granorum ornatâ; basi cingulis duabus majoribus prominentibus instructis; interstitiis longitudinaliter striatis; anfractu ultimo subrotundato, basi convexiusculâ, cingulis granorum insculptâ; aperturâ subrotundatâ; labro intus lirato; columellâ basi tuberculo terminatâ.*
*Hab.* ——?

52. Ziziphinus californicus, A. Adams. *Z. testâ elevato-conicâ, imperforatâ, rufescenti; anfractibus subrotundatis, supra excavatis, liris transversis granulosis, duabus, supra suturam, majoribus; anfractu ultimo subrotundato, basi convexiusculâ; aperturâ subquadratâ; columellâ rectâ, anticè subtuberculatâ.*
*Hab.* California. (Mus. Cuming.)

## Genus 10. CANTHIRIDUS, Montfort.

*Eleuchus*, sp. Humph.; Swains.—*Phasianella*, c., Menke.—*Trochus*, sp. Philippi.

1. CANTHIRIDUS IRIDIS, Chemn.

*Trochus iridis*, Chemn. Conch. v. t. 161. f. 1522–23.—*Trochus iris*, Gmel.

*Hab.* ——?

2. CANTHIRIDUS PURPURATUS, Martyn.

*Trochus purpuratus*, Martyn; Chemn. v. t. 161. f. 1524–25.—*Trochus notatus*, Gmel.—? *Trochus elegans*, Gmel.—? *Phasianella rubella.*

*Hab.* ——?

3. CANTHIRIDUS NITIDULUS, Phil.

*Trochus nitidulus*, Phil.; Kust. Conch. Cab. pl. 43. f. 10.

*Hab.* ——?

4. CANTHIRIDUS CINGULIGER, A. Adams. *C. testâ elevato-conicâ, cinereâ, punctis fuscis in lineis flammulatis dispositis, transversim sulcatâ; anfractibus planis, cingulâ prominenti supra suturam, anfractu ultimo angulato, cingulo plano cincto; umbilico subobtecto; columellâ rectâ; labro intus albo, lævi.*

*Hab.* ——?

5. CANTHIRIDUS PUNCTULOSUS, A. Adams. *C. testâ elevato-conicâ, imperforatâ, lævi, nitidâ, cinereâ, transversim sulcatâ; cingulis transversis, luteo alboque punctatis nigro-maculatis ornatâ; anfractibus planis, ultimo acutè angulato; regione umbilicali roseâ; aperturâ subquadratâ; columellâ albâ, rectâ, anticè subtruncatâ; labro intus lævi, limbo punctulato.*

*Hab.* Swan River, 4 fathoms (*Jukes*).

6. CANTHIRIDUS ZEALANDICUS, A. Adams. *C. testâ obliquè conicâ, subturritâ, imperforatâ, lævi, nitidâ; atro-purpureâ, lineis pallidis transversis, ubique cinctâ; anfractibus paulum convexis; aperturâ obliquâ, subrotundatâ; labio albo, simplici, arcuato; labro intus sulcato, margaritaceo, vividè iridescenti.*

*Hab.* New Zealand.

7. CANTHIRIDUS MONILIGER, A. Adams. *C. testâ elevato-conicâ, imperforatâ, cinereâ, cingulis moniliformibus transversis ornatâ; interstitiis longitudinaliter elevatè striatis; anfractibus planis, apice purpureo, suturâ canaliculatâ; anfractu ultimo angulato; aperturâ subquadratâ; columellâ anticè subtruncatâ; labro intus sulcato.*

*Hab.* Swan River, 8 fathoms (*Jukes*).

8. CANTHIRIDUS ARTICULARIS, A. Adams. *C. testâ elevato-conicâ, lævi, nitidâ, cinereâ; cingulis confertis, nigro alboque*

*articulatis ornatâ; interstitiis longitudinaliter striatis; anfractibus planis, ultimo angulato, basi planiusculâ, cingulis articulatis sculptâ; aperturâ subquadratâ; columellâ anticè subtruncatâ; labro intus lævi, limbo articulato.*
*Hab.* —— ?

9. CANTHIRIDUS ARTIZONA, A. Adams. *C. testâ elevatè conoideâ, pallidâ; cingulis carneolis angustis elevatis transversis ornatâ; interstitiis transversim striatis; anfractu ultimo angulato; aperturâ intus viridescenti; labro intus lirato, limbo rufo articulato.*
*Hab.* —— ?

10. CANTHIRIDUS RUFOZONA, A. Adams. *C. testâ conoideâ, pallidâ, cingulis rubris transversis interstitiis planis ornatâ; anfractu ultimo rotundato; labro intus albo, lævi, limbo rufo-articulato; columellâ albâ.*
*Hab.* —— ?

11. CANTHIRIDUS TENEBROSUS, A. Adams. *C. testâ parvâ, elevato-conicâ, imperforatâ, subnigrâ, transversim sulcatâ, sulcis albicantibus planis; anfractibus paulum convexis, ultimo subangulato, basi convexâ; aperturâ subrotundatâ, intus albâ, margaritaceâ; labro intus sulcato.*
*Hab.* —— ?

12. CANTHIRIDUS NIGRICANS, A. Adams. *C. testâ depresso-conicâ, atro-purpureâ, cingulis elevatis transversis ornatâ; interstitiis longitudinaliter obliquè striatis; anfractu ultimo subangulato; labro intus albo, sublævi, limbo nigro.*
*Hab.* —— ?

13. CANTHIRIDUS PALLIDULUS, A. Adams. *C. testâ elevato-conicâ, imperforatâ, pallidâ; cingulis transversis elevatis luteo-articulatis ornatâ; interstitiis concinnè longitudinaliter striatis; columellâ subrectâ, in medio tumidâ; labro intus lirato.*
*Hab.* Australia.

### Genus 11. ELEUCHUS, Swains.

*Phasianella*, d., Menke.—*Canthiridus*, sp. Gray.

1. ELEUCHUS BADIUS, Wood.
*Trochus badius*, Wood, Ind. Test. Suppl. pl. 6. fig. 46.
*Hab.* —— ?

2. ELEUCHUS ROSEUS, Lamk.
*Monodonta rosea*, Lamk. Hist. An. s. Vert. t. vii. p. 37.
*Hab.* —— ?

3. ELEUCHUS LINEATUS, Lamk.
*Monodonta lineata*, Lamk. Hist. An. s. Vert. t. vii. p. 38.
*Hab.* —— ?

4. **Eleuchus irisodontes**, Quoy & Gaim.

*Trochus irisodontes*, Quoy & Gaim. Voy. de l'Astr. iii. p. 246. t. 63. f. 7–12.—*Monodonta virgata*, Menke.

*Hab.* ——?

5. **Eleuchus bellulus**, Dunker.

*Trochus bellulus*, Dunker; Phil. Abbild. t. 7. f. 6.

*Hab.* ——?

6. **Eleuchus apicinus**, Menke.

*Monodonta apicina*, Menke, Moll. Nov. Holl. sp. p. 15.

*Hab.* ——?

7. **Eleuchus leucostigma**, Menke.

*Trochus leucostigma*, Menke; Phil. Abbild. t. 7. f. 7.—*Phasianella leucostigma*, Menke.—*Canthiridus variegatus*, Gray.

*Hab.* ——?

8. **Eleuchus australis**, Quoy & Gaim.

*Trochus australis*, Quoy & Gaim. Voy. de l'Astr. pl. 63. f. 13, 14.

*Hab.* ——?

9. **Eleuchus splendidulus**, Swains.

*Eleuchus splendidulus*, Swains. Treatise on Malacol. p. .

*Hab.* ——?

10. **Eleuchus vulgaris**, A. Adams. *E. testâ ovato-conoideâ, subturritâ, imperforatâ, lævigatâ, virenti, transversim tenuissimè striatâ; lineis undulatis viridis pictâ, basi convexâ; aperturâ ovatâ; columellâ basi dente acuto terminatâ; labro posticè subangulato.*

*Hab.* Swan River.

11. **Eleuchus rutilus**, A. Adams. *E. testâ turrito-conicâ, imperforatâ; spirâ acuminatâ, virido-fuscâ, lineis longitudinalibus rufescentibus ornatâ, transversim striatâ; anfractu ultimo vix angulato; aperturâ intus vividè iridescente; labro viridi marginato.*

*Hab.* Australia.

### Genus 12. BANKIVIA, Deshayes.

1. **Bankivia purpurascens**, Beck.

*Bankivia purpurascens*, Beck; Deshayes, Manuel de Conchyliologie.—*Bankivia varians*, Gray, MS. Mus. Brit.

*Hab.* Australia.

2. **Bankivia major**, A. Adams. *B. testâ ovato-turritâ, nigrofuscâ albo variegatâ, lævigatâ, longitudinaliter obliquè striatâ; anfractu ultimo ventricoso, transversim sulcato; columellâ albâ, tortuosâ.*

*Hab.* Australia. Mus. Cuming.

3. BANKIVIA NITIDA, A. Adams. *B. testâ turritâ, acuminatâ, carneolâ, suturis nigricantibus, lævi, nitidâ, transversim tenuissimè striatâ; columellâ anticè tortuosâ; labro ad marginem nigricante.*
*Hab.* Australia. Mus. Cuming.

### Genus 13. THALOTIA, Gray.

*Elenchus*, sp. Humph.—*Helenchus*, Herman.

1. THALOTIA PICTA, Wood.

*Trochus pictus*, Wood, Ind. Test. Suppl. pl. 5. f. 28.—*Thalotia picta*, Gray.—*Monodonta turrita*, Menke.
*Hab.* New Holland.

2. THALOTIA PULCHERRIMA, Wood.

*Trochus pulcherrimus*, Wood, Ind. Test. Suppl. pl. 6. f. 45.—*Trochus Preissii*, Menke.—*Trochus porcatus*, Philippi.
*Hab.* New Zealand.

3. THALOTIA AUSTRALIS, Quoy et Gaim.

*Trochus australis*, Quoy et Gaim. Voy. de l'Astrol. pl. 63. f. 13, 14.
*Hab.* Australia.

4. THALOTIA LEHMANNI, Menke.

*Trochus Lehmanni*, Menke, Moll. Nov. Holl. sp. p. 18.—?*Phasianella elegans*, Lamarck.
*Hab.* New Holland.

5. THALOTIA ELONGATA, Wood.

*Trochus elongatus*, Wood, Ind. Test. Suppl. pl. 5. f. 19.—*Trochus attenuatus*, Jonas.
*Hab.* ——?

6. THALOTIA OBSCURA, Wood.

*Trochus obscurus*, Wood, Ind. Test. Suppl. pl. 5. f. 26.—*Trochus signatus*, Jonas.
*Hab.* ——?

7. THALOTIA PYRGOS, Phil.

*Trochus pyrgos*, Phil. Kust. Conch. Cab. pl. 43. f. 14.
*Hab.* ——?

8. THALOTIA ZEBUENSIS, A. Adams. *Th. testâ elevato-conoideâ, perforatâ, atro-fuscâ, fasciis longitudinalibus ornatâ, transversim sulcatâ; anfractibus planulatis, ultimo rotundato, basi convexâ; labio subrecto, anticè reflexo, dilatato; aperturâ subcirculari, intus albâ; labro intus lævi, atro-marginato.*
*Hab.* San Nicholas, island of Zebu, sandy mud, 6 fathoms (*H.C.*).

9. THALOTIA STRIGATA, A. Adams. *Th. testâ turrito-conicâ, perforatâ, albidâ, fasciis latis rufo-fuscis radiatâ; anfractibus in*

*medio angulatis porcis transversis subgranulosis, interstitiis longitudinaliter striatis ornatâ, basi convexâ, concentricè porcatâ; umbilico aperto; aperturâ subrotundatâ; columellâ subflexuosâ, basi truncatâ; labro intus lirato, margine crenulato.*

*Hab.* Swan Point, N. Australia (*Dring*).

10. THALOTIA ZEBRIDES, A. Adams. *Th. testâ turrito-conicâ, subperforatâ, virescenti, lineis atro-purpureis longitudinalibus ornatâ, porcis transversis confertis sculptâ, longitudinaliter striatâ, basi convexâ; umbilico subobtecto; columellâ sinuatâ, callo terminatâ; labro intus lirato, margine atro-purpureo articulato.*

*Hab.* ——?

11. THALOTIA SUTURALIS, A. Adams. *Th. testâ conicâ, subperforatâ, virescenti, lineis purpureis longitudinalibus undulatis ornatâ, transversim liratâ, longitudinaliter striatâ; anfractibus planis, supra suturam elevatis; suturâ canaliculatâ, basi planiusculâ; columellâ brevi, basi tuberculo terminatâ; labro intus lævi, viridi.*

*Hab.* Cape Upstart, Torres Straits, Australia, under stones, low water (*Dring*).

12. THALOTIA TRICINGULATA, A. Adams. *Th. testâ conicâ, imperforatâ, nigrâ, lineis albis longitudinalibus ornatâ; anfractibus angulatis, ultimo cingulis tribus transversis prominentibus instructo, basi convexâ, cingulis concentricis nigro alboque articulatis ornatâ; labio ad basin tuberculato; aperturâ subrotundatâ, intus albâ; labro intus liris elevatis, atro-marginato.*

*Hab.* ——?

13. THALOTIA CRENELLIFERA, A. Adams. *Th. testâ elevato-conicâ, imperforatâ, rufescente, rubro maculosâ; spirâ acuminatâ, apice rubro; anfractibus planulatis, liris confertis, crenellatis, transversis, interstitiis obliquè longitudinaliter striatis; anfractu ultimo subangulato, basi convexiusculâ; aperturâ subquadratâ, intus albâ; columellâ albâ, incurvatâ, anticè truncatâ.*

*Hab.* Australia. Mus. Cuming.

## Genus 14. MONODONTA, Lamarck.

*Monodon*, Schweiger.—*Monodontes*, Montfort.—*Odontis*, Sow.—*Trochidon*, Swains.—*Diloma*, Phil.—*Trochulus*, sp. Humph.

1. MONODONTA LABIO, Linn.

*Trochus Labio*, Linn. Syst. Nat. ed. 12. no. 595. p. 1230; Chemn. Conch. pl. 166. fig. 1579–81. v. p. 60.

*Hab.* ——?

2. MONODONTA TURBINATA, Gmel.

*Trochus turbinatus*, Gmel. t. 63. f. D. E.

*Hab.* ——?

3. Monodonta aspera, Chemn.
*Trochus asper*, Chemn. v. pl. 166. f. 3582.
*Hab.* —— ?

4. Monodonta canalifera, Lamck.
*Monodonta canalifera*, Lamck. Hist. An. s. Vert. tom. vii. p. 35.
*Hab.* —— ?

5. Monodonta australis, Lamck.
*Monodonta australis*, Lamck. Hist. An. s. Vert. tom. vii. p. 35; Chemn. Conch. ii. t. 196. f. 1890, 1891.
*Hab.* —— ?

6. Monodonta atrata, Gmel.
*Turbo atratus*, Gmel. 3601; Chemn. Conch. pl. 177. f. 1754, 1755. —*Monodonta canaliculata*, Lamck.—*Monodonta Fermoni*, Payr.
*Hab.* Island of Ticao, on stones on the reefs, low water (*H. C.*).

7. Monodonta viridis, Lamck.
*Monodonta viridis*, Lamck. Hist. An. s. Vert. tom. vii. p. 35.
*Hab.* Port Essington (*Jukes*).

8. Monodonta tricarinata, Lamck.
*Monodonta tricarinata*, Lamck. Hist. An. s. Vert. vii. p. 36.
*Hab.* —— ?

9. Monodonta baccata, Menke.
*Monodonta baccata*, Menke, Moll. Nov. Holl. sp. p. 14. no. 51.
*Hab.* New Holland.

10. Monodonta Dunkeri, Koch.
*Monodonta Dunkeri*, Koch, Phil. Abbild. Trochus, tab. 2. f. 5.
*Hab.* —— ?

11. Monodonta Philippii, Koch.
*Monodonta Philippii*, Koch, Phil. Abbild. Trochus, tab. 2. f. 6.
*Hab.* —— ?

12. Monodonta crenulata, Menke.
*Monodonta crenulata*, Menke, Moll. Nov. Holl. sp. p. .
*Hab.* —— ?

13. Monodonta aspersa, Koch.
*Trochus aspersus*, Koch, Zeit. fur Malac. 1846, July, p. 103.
*Hab.* —— ?

14. Monodonta indecora, Phil.
*Trochus indecorus*, Phil. Zeit. fur Malac. 1846, July, p. 104.
*Hab.* —— ?

15. Monodonta gemmata, Gould.
*Trochus* (*Monodonta*) *gemmatus*, Gould, Exp. Shells, p. .
*Hab.* Sandwich Islands.

16. Monodonta inconspicua, Phil.

*Trochus* (*Monodonta*) *inconspicuus*, Phil. Kust. Conch. Cab. t. 43. f. 12.

*Hab.* ——?

17. Monodonta rugulosa, A. Adams. *M. testâ ovato-conoideâ, depressâ, atro-fuscâ, fasciis latis luteo-albis irregulariter pictâ, cingulis rotundatis interruptis ornatâ; columellâ basi bituberculatâ, canali parallelo instructâ, dente magno acuto terminatâ; labro duplicato, intus lirato.*

*Hab.* ——?

18. Monodonta circumcincta, A. Adams. *M. testâ ovato-conoideâ, imperforatâ, lævi, nitidâ, crassâ, cingulis rubris albo viridi maculatis alternantibus pictâ; anfractibus convexis; columellâ basi tuberculatâ, dente magno acuto terminatâ; labro duplicato, intus lirato.*

*Hab.* Island of Ticao, on the stones on reefs at low water (*H. C.*).

19. Monodonta tuberculata, A. Adams. *M. testâ ovato-conoideâ, imperforatâ, crassâ, viridescenti, cingulis tuberculorum oblongorum violaceorum ornatâ; anfractibus convexis; columellâ basi trituberculatâ, canali parallelo instructâ, dente prominente acuto terminatâ; labro duplicato, intus lirato.*

*Hab.* ——?

### Subgenus Aradasia, Gray.

Operculum suborbicular, paucispiral.

*Aradasia*, Gray, in Mrs. Gray's Figures of Molluscous Animals, p. 90. —? *Otavia*, Cantr.

20. Monodonta sulcifera, A. Adams. *M. testâ globoso-conicâ, umbilicatâ, fuscâ, cingulis granorum distantium moniliformibus, interstitiis profundè sulcatis, sulcis sublævibus longitudinaliter striatis ornatâ; columellâ ad basin trisulcatâ, dente parvo acuto instructâ; labro tenui, intus sulcato.*

*Hab.* Roebuck Bay, North Australia (*Dring*).

21. Monodonta clathrata, A. Adams. *M. testâ ovato-conoideâ, albâ, imperforatâ, cingulis subgranosis distantibus ornatâ, in anfractu ultimo septem, interstitiis costulis longitudinalibus eleganter clathratis; columellâ tuberculo parvo terminatâ; labro intus sulcato.*

*Hab.* Guidulman, island of Bohol, rocky ground, 60 fathoms (*H. C.*).

22. Monodonta tricingulata, A. Adams. *M. testâ globoso-conoideâ, umbilicatâ, rubente, albo et fusco variegatâ, cingulis parvulis granorum ornatâ; suturâ canaliculatâ; anfractibus convexis, carinis tribus transversis prominentibus cinctis; umbilico profundo; columellâ ad basin tuberculo parvo terminatâ; labro expanso, tenui, intus lævi.*

*Hab.* Malacca; Singapore, fine sand, 6 fathoms (*H. C.*).

23. MONODONTA PHILIPPINA, A. Adams. *M. testâ globoso-conicâ, perforatâ, fuscâ nigro punctatâ; cingulis granulatis inæqualibus ornatâ, interstitiis clathratulis; umbilico parvo; columellâ tuberculo parvo terminatâ; labro intus sulcato.*

*Hab.* Puerto Galero, island of Mindoro, in coarse sand, 9 fathoms; Bolinao, province of Zambales, island of Luzon, sandy mud, 10 fathoms (*H. C.*).

24. MONODONTA EDENTULA, A. Adams. *M. testâ ovato-conoideâ, umbilicatâ, fuscâ, costellis transversis imbricatis, interstitiis clathratis sculptâ; anfractibus valde rotundatis; umbilico infundibuliformi; columellâ subrectâ, basi tuberculo terminatâ; labro margine crenulato.*

*Hab.* Catbalonga, island of Samar, sandy mud, 6 fathoms (*H. C.*). Mus. Cuming.

25. MONODONTA FOVEOLATA, A. Adams. *M. testâ globoso-conoideâ, subperforatâ, crassâ, albâ, cingulis transversis nodulosis subdistantibus (in anfractu ultimo septem), interstitiis costellis longitudinalibus foveolatis ornatâ; columellâ dente minuto terminatâ; labro intus crasso et lirato.*

*Hab.* Lord Hood's Island, on pearl oysters, 8 to 10 fathoms (*H. C.*). Mus. Cuming.

26. MONODONTA EXIGUA, A. Adams. *M. testâ parvâ, conoideâ, umbilicatâ, albidâ fusco variegatâ, cingulis transversis granulosis interstitiis longitudinaliter liratis ornatâ; anfractibus parum convexis, ultimo subangulato; umbilico recto, dente valido acuto terminatâ; labro intus sulcato.*

*Hab.* Japan (*Siebold*).

27. MONODONTA RUBRA, A. Adams. *M. testâ globoso-conoideâ, umbilicatâ, rubrâ, cingulis transversis granorum moniliformibus æquantibus interstitiis lineis longitudinalibus impressis ornatâ; anfractibus rotundatis, suturâ canaliculatâ, umbilico magno; columellâ rectâ, dente prominente terminatâ; labro intus crasso, sulcato.*

*Hab.* ——?

28. MONODONTA ALVEOLATA, A. Adams. *M. testâ globoso-conoideâ, umbilicatâ, albidâ, fasciis fuscis longitudinalibus undulatis pictâ, cingulis transversis granorum acutorum interstitiis costis longitudinalibus alveolatis ornatâ; suturâ canaliculatâ; umbilico angusto; columellâ rectâ, dente valido terminatâ; labro intus valde lirato.*

*Hab.* Guidulman, island of Bohol, rocky ground, 60 fathoms; Baclayon, island of Bohol, under stones, low water; island of Capul, on the reefs at low water (*H. C.*). Mus. Cuming.

29. MONODONTA ANGULIFERA, A. Adams. *M. testâ elevato-conoideâ, imperforatâ; anfractibus planiusculis, imbricatis, infernè angulatis, longitudinaliter nodoso-costatis, cingulis trans-*

*versis tuberculorum subdistantium interstitiis alveolatis ornatâ; anfractu ultimo subangulato; columellâ rectâ, brevi, dente parvo terminatâ; labro subduplicato, intus sulcato.*

*Hab.* Puerto Galero, island of Mindoro, sandy mud, 6 fathoms (*H. C.*). Mus. Cuming.

30. MONODONTA STRANGEI, A. Adams. *M. testâ conoideâ, perforatâ, fuscâ, cingulis granorum æqualibus confertis ornatâ; anfractibus parum convexis, ultimo subangulato; columellâ curvatâ, dente obtuso terminatâ; labro intus sulcato, tuberculo propè basin columellæ.*

*Hab.* Sydney, under stones (*Strange*).

31. MONODONTA PUNCTIGERA, A. Adams. *M. testâ globoso-conoideâ, umbilicatâ, albâ fusco punctatâ, cingulis granulosis inæqualibus rufo-punctatis ornatâ; suturâ canaliculatâ; anfractibus rotundatis; umbilico aperto, infundibuliformi; columellâ rectâ, brevi, basi bituberculatâ, dente parvo acuto terminatâ; labro expanso, intus sulcato.*

*Hab.* Singapore, fine sand, 6 fathoms (*H. C.*). Mus. Cuming.

32. MONODONTA EXASPERATA, A. Adams. *M. testâ globoso-conoideâ, umbilicatâ, subdepressâ, albidâ nigro-variegatâ, cingulis spino-granulatis exasperatâ; columellâ sinuatâ, dente prominenti terminatâ; labro incrassato, duplicato, intus valde lirato.*

*Hab.* Sibonga, island of Zebu, at low water (*H. C.*); island of Siquijor, under stones. Mus. Cuming.

33. MONODONTA SPILOTA, A. Adams. *M. testâ parvâ, ovato-depressâ, conoideâ, imperforatâ, lævi, nitidâ, viridi, maculis pallidis triangularibus; columellâ planâ, albâ, canali parallelo instructâ, dente obtuso terminatâ; labro duplicato, intus lirato.*

*Hab.* ——?

34. MONODONTA LIROSTOMA, A. Adams. *M. testâ elevato-conicâ, imperforatâ, albidâ; anfractibus planis, cingulis tribus granulatis, interstitiis valde clathratis; suturâ canaliculatâ; anfractu ultimo angulato; columellâ tuberculatâ; labro intus valde lirato.*

*Hab.* Lord Hood's Island, on pearl oysters, 8 to 10 fathoms (*H.C.*). Mus. Cuming.

### Genus 15. LABIO, Oken.

*Osilinus*, Philippi.—*Trochius*, Leach.—*Gibbium*, Gray.—*Monodonta*, sp. Lamck.—*Melagraphia*, Steutz.

1. LABIO CONSTRICTA, Lamck.

*Monodonta constricta*, Lamck. Hist. An. s. Vert. tom. vii. p. 36.—*Monodonta interrupta*, Menke (olim).—*L'Oslin*, Adanson.

*Hab.* Australia.

2. **Labio tessellata**, Chemn.

*Trochus tessellatus*, Chemn. Conch. t. 166. f. 1583-87.—*Trochus tessellatus*, Born.—*Monodonta fragarioides*, Lamck.—*Monodonta Olivieri*, Payr.

*Hab*. New Zealand.

3. **Labio zebra**, Wood.

*Trochus zebra*, Wood, Ind. Test. Suppl. pl. 5. f. 18.—*Trochus atratus*, Wood.

*Hab*. ——?

4. **Labio reticularis**, Wood.

*Trochus reticularis*, Wood, Ind. Test. Suppl. pl. 5. f. 35.—*Turbo lunaris*, &c., Chemn. Conch. pl. 185. f. 1849.—*Tr. concameratus*, Wood.

*Hab*. New Zealand and Australia.

5. **Labio articulata**, Lamck.

*Monodonta articulata*, Lamck. Hist. An. s. Vert. tom. vii. p. 36.—*Monodonta Draparnaudii*, Payr.

*Hab*. Malta.

6. **Labio sulcata**, Wood.

*Trochus sulcatus*, Wood, Ind. Test. Suppl. pl. 6. f. 40.

*Hab*. New Zealand (*Earl*).

7. **Labio tæniata**, Quoy et Gaim.

*Trochus tæniatus*, Quoy et Gaim. Voy. de l'Astrol. p. 249. pl. 63. f. 15–17.

*Hab*. New Zealand.

8. **Labio striolata**, Quoy et Gaim.

*Trochus striolatus*, Quoy et Gaim. Voy. de l'Astr. p. 253. pl. 63. f. 18–22.

*Hab*. Australia.

9. **Labio zealandica**, Quoy et Gaim.

*Trochus Zealandicus*, Quoy et Gaim. Voy. de l'Astr. p. 237. pl. 64. f. 12–15.

*Hab*. New Zealand.

10. **Labio cingulata**, Quoy et Gaimard.

*Trochus cingulatus*, Quoy et Gaim. Voy. de l'Astr. p. 259. pl. 64. f. 16–20.—*Trochus radula*, Philippi.

*Hab*. New Zealand.

11. **Labio nigerrima**, Gmel.

*Turbo nigerrimus*, Gmel. Chemn. v. pl. 185. f. 1848.

*Hab*. New Zealand (*Earl*).

12. **Labio subrostrata**, Gray.

*Monodonta subrostrata*, Gray.

*Hab*. Australia.

13. LABIO MELANOLOMA, Menke.

*Monodonta melanoloma*, Menke, Moll. Nov. Holl. specim. p. 14. no. 50.—*Trochus melanonoma*, Phil. Abbild. p. 22.

*Hab*. New Zealand.

14. LABIO TAMSII, Dunker.

*Trochus Tamsii*, Dunker, Phil. Abbild. Trochus, t. 5. f. 3.

*Hab*. South Africa; Guinea; Cape of Good Hope.

15. LABIO SCORPIO, Gray.

*Monodonta scorpio*, Gray.

*Hab*. New. Zealand.

16. LABIO PICA, Chemn.

*Turbo pica*, Chemn. Conch. v. pl. 175. f. 1850.—*Trochus zebrinus*, Philippi.

*Hab*. New Zealand.

17. LABIO LINEATA, Da Costa.

*Turbo lineatus*, Da Costa, Brit. Conch. p. 100. pl. 6. f. 7.—*Trochus crassus*, Pultney.—*Monodonta lugubris*, Lamk.—*Trochus punctulatus*, Blainv.—*Monodonta crassa*, MacGill.—*Trochus lineatus*, Forbes & Hanley.

*Hab*. British Islands.

18. LABIO TURGESTINA, Phil.

*Trochus turgestinus*, Phil. Kust. Conch. Cab.

19. LABIO INDECORA, Phil.

*Trochus indecorus*, Phil. Kust. Conch. Cab.

20. LABIO FULGURATA, Phil.

*Trochus fulguratus*, Phil. Kust. Conch. Cab.

21. LABIO CRINITUS, Phil.

*Trochus crinitus*, Phil. Kust. Conch. Cab.

22. LABIO PORCATA, A. Adams. *L. testâ ovato-conoideâ, imperforatâ, fuscâ albo reticulatâ; anfractibus convexis, transversim carinatis, carinis numerosis, elevatis, distantibus; labio albo, infernè subcalloso; labro intus sulcato.*

*Hab*. Australia.

23. LABIO PORCIFERA, A. Adams. *L. testâ orbiculato-conicâ, imperforatâ, fulvescente, liris transversis æquidistantibus nigro-articulatis ornatâ; longitudinaliter obliquè striatâ; labio plano, regione umbilicali impresso; columellâ tuberculis duobus, inferiore majore; labro intus duplicato, margine luteo nigro-articulato.*

*Hab*. ——?

24. LABIO RUDIS, A. Adams. *L. testâ orbiculato-conicâ, imperforatâ; spirâ obtusâ, lutescente, lineis transversis nigris ornatâ,*

*longitudinaliter obliquè striatâ, transversim subexaratâ; labio complanato; columellâ anticè subtuberculatâ; labro nigro luteoque intus marginato.*
*Hab.* Australia.

25. Labio fuliginea, A. Adams. *L. testâ orbiculato-conicâ, imperforatâ, nigrâ, liris transversis æquidistantibus luteo-articulatis ornatâ; regione umbilicali impressâ; columellâ tuberculis duobus, antico majore; labro duplicato, nigro-marginato.*
*Hab.* ——?

26. Labio corrosa, A. Adams. *L. testâ turbinatâ, imperforatâ, spirâ elevatiusculâ, anfractibus rotundatis, rugosâ, cinereolutescente; anfractu ultimo subangulato; labio complanato; columellâ simplici; labro luteo marginato.*
*Hab.* New Zealand (*Hart*).

27. Labio concolor, A. Adams. *L. testâ turbinato-conicâ, imperforatâ; spirâ acutâ, brunneâ, longitudinaliter obliquè striatâ, transversim sublirâtâ; labio complanato, regione umbilicali impresso; columellâ arcuatâ, anticè tuberculo terminatâ; labro nigro-fusco marginato.*
*Hab.* New Zealand (*Hart*).

### Genus 16. Chlorostoma, Swainson.—*Oxystele*, Philippi.

1. Chlorostoma argyrostoma, Chemn.
*Trochus argyrostomus*, Chemn. v. pl. 165. f. 1562, 1563.
*Hab.* Cape of Good Hope.

2. Chlorostoma agreste, Chemn.
*Trochus agrestis*, Chemn. v. pl. . f. 1645, 1646.—*Trochus rusticus*, Gmel.
*Hab.* South Seas.

3. Chlorostoma nigerrimum, Gmel.
*Trochus nigerrimus*, Gmel.; Chemn. v. pl. . f. 1647.
*Hab.* New Zealand.

4. Chlorostoma atrum, Lesson.
*Trochus ater*, Lesson, Voy. de la Coquille, Moll. pl. 16. f. 2.—*Trochus atropurpureus*, Jonas.
*Hab.* Valparaiso, under stones (*H. C.*).

5. Chlorostoma mœstum, Jonas.
*Trochus mœstus*, Jonas, Zeit. f. Malac. 1844, August, p. 113.
*Hab.* Chili.

6. Chlorostoma tigrinum, Chemn.
*Trochus tigrinus*, Chemn. v. pl. 165. f. 1566.
*Hab.* Algoa Bay.

7. **Chlorostoma carinatum**, Koch.
*Trochus carinatus*, Koch, Phil. Abbild. Troch. t. 2. f. 3.
*Hab*. Valparaiso, 6 fathoms, coarse sand (*H. C.*).

8. **Chlorostoma euryomphalus**, Jonas.
*Trochus euryomphalus*, Jonas, Zeit. f. Malac. 1844, August, p. 113.
*Hab*. West coast of America.

9. **Chlorostoma stenomphalus**, Jonas.
*Trochus stenomphalus*, Jonas, Zeit. f. Malac. 1844, August, p. 114.—*Trochus tridens*, Jonas, olim.—*Trochus microstomus*, D'Orbigny.
*Hab*. Valparaiso.

10. **Chlorostoma merula**, Chemn.
*Trochus merula*, Chemn. v. pl. 165. f. 1564, 1565.—*Trochus Sinensis*, Gmel.—*Trochus lugubris*, Lamk.
*Hab*. Cape of Good Hope.

11. **Chlorostoma marginatum**, Nuttall.
*Trochus marginatus*, Nuttall, MSS.
*Hab*. Upper California.

12. **Chlorostoma cicer**, Menke.
*Trochus cicer*, Menke, Phil. Abbild. Troch. t. 3. f. 5.
*Hab*. ——?

13. **Chlorostoma sagittiferum**, Lamk.
*Trochus sagittiferus*, Lamck. Hist. An. s. Vert. tom. vii. p. .
*Hab*. ——?

14. **Chlorostoma tabulare**, Krauss.
*Trochus tabularis*, Krauss, Sudafrik. Mollusk. p. 97. t. 5. f. 30.
*Hab*. Cape of Good Hope.

15. **Chlorostoma læve**, Chemn.
*Trochus lævis*, Chemn. Conch. v. p. 171. f. 1670.—*Trochus lævigatus*, Gmel.—*Trochus Richardi*, Payraud.
*Hab*. ——?

16. **Chlorostoma sauciatum**, Koch.
*Trochus sauciatus*, Koch, Phil. Abbild. Trochus, t. 5. f. 7.
*Hab*. ——?

17. **Chlorostoma bicanaliculatum**, Dunker.
*Trochus bicanaliculatus*, Dunker, Phil. Abbild. Troch. t. 5. f. 4.
*Hab*. ——?

18. **Chlorostoma Pfeifferi**, Philippi.
*Trochus Pfeifferi*, Phil. Zeit. f. Malac. 1846, July, p. 104.
*Hab*. ——?

19. CHLOROSTOMA GALLINA, Forbes.
*Trochus gallina*, Forbes, Moll. Kellett's Voy.
*Hab.* ——?

20. CHLOROSTOMA PULLIGO, Martyn.
*Trochus pulligo*, Martyn.
*Hab.* ——?

21. CHLOROSTOMA IMPERVIUM, Menke.
*Trochus impervius*, Menke, Spec. Moll. Nov. Holland.—*Trochus suavis*, Phil. Kust. Conch. Cab. pl. 42. f. 1.
*Hab.* New Holland.

22. CHLOROSTOMA ODONTIS, Wood.
*Trochus odontis*, Wood, Ind. Test. Suppl. pl. 6. f. 37.
*Hab.* Port Philip, on the rocks at low water (*Jukes*).

23. CHLOROSTOMA CASTANEUM, A. Adams. *C. testâ obliquè conicâ, umbilicatâ, castaneâ; anfractibus planis, longitudinaliter obsoletè nodoso-plicatis et obliquè striatis, penultimo infra marginato, ultimo acutangulo, basi concavo pallidè fuscâ, lineis viridi-fuscis radiatim pictâ; umbilico infundibuliformi, perspectivo, intus albo, peromphalo albo lineâ elevatâ cincto; aperturâ subrhomboideâ; columellâ supra sinuatâ, basi dente terminatâ.*
*Hab.* ——?

24. CHLOROSTOMA UNDULOSUM, A. Adams. *C. testâ globoso-conicâ, imperforatâ; spirâ depressâ, virescenti lineis undulatis atro-purpureis longitudinalibus ornatâ, longitudinaliter substriatâ; labio complanato, margine columellari subtuberculato; labro intus sulcato, margine luteo, atro-purpureo articulato.*
*Hab.* New Zealand (*Earl*).

25. CHLOROSTOMA TURBINATUM, A. Adams. *C. testâ turbinatâ, profundè umbilicatâ, nigrâ; spirâ obtusâ, longitudinaliter subplicatâ, transversim sulcosâ; anfractu ultimo rotundato, regione umbilicali partim callo lutescente obtectâ; columellâ anticè bituberculatâ; labro nigro marginato.*
*Hab.* ——?

26. CHLOROSTOMA RUGOSUM, A. Adams. *C. testâ turbinato-conoidali, profundè umbilicatâ, luteo-fuscâ, nigro variegatâ, longitudinaliter nodoso-plicatâ, transversim sulcatâ; anfractu ultimo rotundato, infra suturam angustato; columellâ incurvatâ, anticè bituberculatâ, tuberculo supremo magno, prominente; labro fusco marginato.*
*Hab.* ——?

27. CHLOROSTOMA CORRUGATUM, A. Adams. *C. testâ orbiculato-conoidali, profundè umbilicatâ; spirâ subacutâ, longitudi-*

*naliter corrugato-plicatâ et obliquè striatâ; anfractu ultimo subrotundato, basi plano convexo, regione umbilicali albido subcalloso; columellâ tuberculis duobus, supremo magno.*
*Hab.* ——?

28. Chlorostoma tropidophorum, A. Adams. *C. testâ orbiculato-depressâ, profundè umbilicatâ; spirâ brevi, nigrâ, transversim sulcatâ, cingulis transversis prominentibus ornatâ; anfractu ultimo carinato, basi concentricè exarato, regione umbilicali albo sulco circulari circumdato; columellâ tuberculis duobus, supremo acuto, prominente.*
*Hab.* Valparaiso.

29. Chlorostoma maculosum, A. Adams. *C. testâ conicâ, profundè umbilicatâ, viridi-fuscâ, maculis nigro-fuscis ornatâ; anfractibus planulatis, longitudinaliter substriatis, transversim striatis; anfractu ultimo angulato, basi concavo; columellâ anticè tuberculo acuto terminatâ.*
*Hab.* ——?

30. Chlorostoma seminodosum, A. Adams. *C. testâ depresso-conicâ, profundè umbilicatâ, fuscâ; anfractibus planulatis, supernè subnodosis, longitudinaliter obliquè striatis; anfractu ultimo angulato, supra angulum cingulâ transversâ elevatâ ornato, basi planiusculâ; columellâ tuberculis duobus, supremo acuto, prominente.*
*Hab.* ——?

31. Chlorostoma articulatum, A. Adams. *C. testâ orbiculato-conicâ, umbilicatâ, nigro-fuscâ, cingulis transversis elevatis albo-articulatis ornatâ; anfractu ultimo subangulato, basi cingulis albo-articulatis instructo, regione umbilicali viridi; columellâ tuberculo parvo terminatâ.*
*Hab.* ——?

32. Chlorostoma xanthostigma, A. Adams. *C. testâ conoideâ, imperforatâ, glabrâ, nigrâ, longitudinaliter obliquè substriatâ; anfractibus parum rotundatis, basi concentricè lirato, luteo-carneolo; regione umbilicali callo luteo obtectâ; columellâ arcuatâ, basi dente terminatâ et infra tuberculo instructâ.*
*Hab.* ——?

33. Chlorostoma turbinatum, A. Adams. *C. testâ ovato-conoideâ, imperforatâ, castaneâ, lævi, longitudinaliter obliquè striatâ, striis transversis indistinctis insculptâ; anfractibus rotundatis, suturâ angustè canaliculatâ, regione umbilicali impressâ; labio curvato, basi dente et tuberculo terminatâ; labro intus sulcato.*
*Hab.* ——?

## Genus 17. GIBBULA, Leach.

*Trochus*, sp. Linn.—*Steromphala*, Leach.—*Monodonta*, sp. Lam.

1. GIBBULA MAGUS, Linn.

*Trochus magus*, Linn. Syst. Nat. ed. 12. p. 1228.—*Trochus tuberculatus*, Da Costa.
*Hab.* British Islands.

2. GIBBULA FANULUM, Gmel.

*Trochus Fanulum*, Gmel., Petiver, Gazoph. t. 156. f. 15.
*Hab.* Malta.

3. GIBBULA DECLIVIS, Forskal.

*Turbo declivis*, Forsk. Descr. Anim. p.126; Chemn. Conch. pl.171. f. 1663, 1664.—*Trochus Ægyptiacus*, Gmel.
*Hab.* Suez.

4. GIBBULA CINERARIA, Linn.

*Trochus cinerarius*, Linn. Syst. Nat. ed. 12. p. 1229.—*Trochus lineatus*, Da Costa.—*Trochus perforatus*, Smith.—*Trochus inflatus*, Blainv.—*Trochus versicolor*, Andrg.—*Trochus lineolatus*, Potiez and Mich.—*Trochus littoralis*, Brown.—*Trochus electissimus*, Bean.
*Hab.* British Islands.

5. GIBBULA SCABRA, Linn.

*Trochus scaber*, Linn. Syst. Nat. ed. 10. no. 510. p. 785; Chemn. Conch. t. 171. f. 1667.
*Hab.* European Seas.

6. GIBBULA QUADRATA, Gmel.

*Trochus quadratus*, Gmel., Wood, Ind. Test. pl. 29. f. 45; Chemn. Conch. pl. 171. f. 1683.—*Trochus Biasoletti*, Philippi.—*Trochus magulus*, Deshayes.
*Hab.* Mediterranean.

7. GIBBULA FUSCATA, Born.

*Trochus fuscatus*, Born, Test. Mus. Cæsar. t. 12. f. 1, 2.—*Trochus umbilicaris*, Lamk. (not Linn.)
*Hab.* ——?

8. GIBBULA CINEREA, Montague.

*Trochus cinereus*, Mont., Donov. Nat. Hist. Brit. Sh. v. t. 155. f. 3.
*Hab.* Britain.

9. GIBBULA DIVARICATA, Linn.

*Trochus divaricatus*, Linn. Syst. Nat. ed. 12. p. 1229.—*Trochus rarilineatus*, Michaud.—? *Turbo sanguineus*, Gmel.
*Hab.* Mediterranean.

10. GIBBULA TUMIDA, Montague.

*Trochus tumidus*, Mont. Test. Brit. t. 10. f. 4.—*Trochus Rackettii*,

Payr.—*Trochus patholatus*, Dillw.—? *Trochus nassaviensis*, Chemn. —*Trochus nitens*, Woodward.—*Margarita undulata*, var. *trochiformis*, Forbes.—Fry, *Skenea serpuloides*, Macgillivray.
*Hab.* British Islands, Mediterranean.

11. Gibbula Adansonii, Payraud.

*Trochus Adansonii*, Payr. Cat.—*Trochus radiatus*, Phil.—*Trochus turbinoides*, Desh.—*Trochus euxinicus*, Andrg.
*Hab.* Corsica, France.

12. Gibbula Agathensis, Recluz.

*Trochus Agathensis*, Recluz.
*Hab.* ——?

13. Gibbula varia, Gmel.

*Trochus varius*, Gmel.—*Trochus varians*, Desh.—*Trochus Gabaldianus* (quibusd.).—*Trochus lævigatus*, Gmel.?
*Hab.* ——?

14. Gibbula multicolor, Krauss.

*Trochus multicolor*, Krauss, Sudafrik. Moll. t. 5. f. 31.
*Hab.* Cape of Good Hope.

15. Gibbula Philberti, Recluz.

*Trochus Philberti*, Recl.
*Hab.* ——?

16. Gibbula jucunda, Gould.

*Trochus jucundus*, Gould, Expedition, Shells, p. 56.
*Hab.* ——?

17. Gibbula Capensis, Gmel.

*Trochus Capensis*, Gmel. Syst. Nat. no. 40; Chemn. Conch. v. t. 171. f. 1661, 1662.
*Hab.* Cape of Good Hope.

18. Gibbula vulnerata, Philippi.

*Trochus vulneratus*, Phil. Zeit. f. Malac. 1846.
*Hab.* ——?

19. Gibbula fasciata, Born.

*Trochus fasciatus*, Born.—*Trochus canaliculatus*, Phil.—*Monodonta Fermonii*, Payr.
*Hab.* ——?

20. Gibbula umbilicata, Montague.

*Trochus umbilicatus*, Mont. Test. Brit. p. 286.—*Trochus umbilicaris*, Pennant.—*Trochus umbilicalis*, Da Costa.—*Trochus obliqueradiatus*, Chemn.—*Trochus cinerarius*, Pultney.
*Hab.* British Islands.

21. Gibbula rotelliformis, Philippi.
*Trochus rotelliformis*, Phil. Zeit. f. Malac. 1846.
*Hab.* ——?

22. Gibbula Adelaidæ, Philippi.
*Trochus Adelaidæ*, Phil. Zeit. f. Malac. 1846.
*Hab.* ——?

23. Gibbula obliquata, Gmel.
*Trochus obliquatus*, Gmel. Syst. Nat.; Wood, Suppl.
*Hab.* ——?

24. Gibbula fumosa, Philippi.
*Trochus fumosus*, Phil. Zeit. f. Malac. 1846.
*Hab.* ——?

25. Gibbula sulcosa, A. Adams. *G. testâ conoideâ, umbilicatâ, maculis roseis flammulis albo-punctatis variegatâ, anfractibus paulum convexis, longitudinaliter substriatâ, transversim sulcatâ, sulcis subdistantibus, anfractu ultimo subangulato, basi convexiusculâ, lineis impressis concentricis sculptâ; aperturâ suborbiculari; columellâ supernè sinuatâ, basi subtruncatâ.*

*Hab.* Sir C. Hardy's Island, North Australia, 8 fathoms, coarse sand (*Mr. Jukes*).

26. Gibbula mindorensis, A. Adams. *G. testâ elevato-conoideâ, perforatâ, viridi-fuscâ, fasciis pallidis longitudinalibus ornatâ; anfractibus rotundatis, liris transversis subgranulosis cinctis, ultimo subangulato, basi convexâ; columellâ subrectâ, basi tuberculo terminatâ; labro intus sulcato.*

*Hab.* Puerto Galero, island of Mindoro, in coarse sand, 9 fathoms (*H. C.*).

27. Gibbula undosa, A. Adams. *G. testâ orbiculato-conoideâ, umbilicatâ, virescenti, lineis fusco-viridibus undatis longitudinalibus pictâ; anfractibus rotundatis, transversim tenuè liratis, ultimo subangulato, basi convexâ; aperturâ expansâ, intus iridescenti; columellâ supernè sinuatâ, basi rotundatâ.*

*Hab.* ——?

28. Gibbula porcellana, A. Adams. *G. testâ depresso-conicâ, latè umbilicatâ, glabrâ, solidâ, nitidâ, lacteâ, lineis radiantibus undulatis pulcherrimè pictâ; anfractibus planis cingulis prominentibus, duabus maculis albis et rufo-fuscis vividè pictis ornatâ; interstitiis transversim sulcatis, basi convexiusculâ, cingulis concentricis lineis maculisque rufo-fuscis ornatâ; umbilico perspectivo, intus concentricè lirato, margine lineâ elevatâ cincto; columellâ subrectâ, basi rotundatâ.*

*Hab.* New Holland.

29. **Gibbula pulchra**, A. Adams. *G. testâ orbiculato-conicâ, umbilicatâ, roseâ, ad suturam albo luteo fuscoque radiatim pulcherrimè pictâ; anfractibus planis, biangulatis, transversim sulcatis, sulcis rubro-articulatis, anfractu ultimo angulato, cingulâ albo luteo nigro fuscoque eleganter pictâ, basi convexâ, concentricè sulcatâ; umbilico intus albo, basi rotundatâ.*
*Hab.* Australia.

30. **Gibbula Kalinota**, A. Adams. *G. testâ orbiculato-conoideâ, perforatâ, virescenti, carneo cinereo variegatâ; anfractibus rotundatis, lineis elevatis albo-articulatis, supernè gibbosis; suturâ profundâ, anfractu ultimo rotundato, basi convexâ, cingulis articulatis concentricis ornatâ, margine umbilici angulato, lineâ elevatâ cincto; columellâ supernè sinuatâ, basi subtruncatâ; labro intus lævi.*
*Hab.* ——?

31. **Gibbula venusta**, A. Adams. *G. testâ orbiculato-conoideâ, umbilicatâ, viridi-fuscâ, maculis albis prope suturas, cingulis subdistantibus fusco rubroque articulatis, interstitiis liratis, longitudinaliter obliquè striatâ; anfractibus supernè gibbosis, rubro pictis; suturâ canaliculatâ, anfractu ultimo rotundato, basi convexiusculâ, cingulis fusco alboque articulatis, regione umbilicali roseo pictâ; columellâ sinuatâ, basi truncatâ.*
*Hab.* Australia.

32. **Gibbula puncto-costata**, A. Adams. *G. testâ turrito-conicâ, lutescenti, umbilicatâ; anfractibus supernè cingulis tribus nodulosis, rubro-articulatis nodulis punctatis, infernè liris transversis nodulosis rubro-articulatis, infra, cingulâ puncto-nodosâ basi planâ, cingulis concentricis subnodosis rubro-articulatis ornatâ, margine umbilici lineâ elevatâ cinctâ; columellâ subrectâ, basi truncatâ; labro intus lirato.*
*Hab.* Island of Capul, on the reefs at low water (*H. C.*).

33. **Gibbula leucosticta**, A. Adams. *G. testâ conoideâ, perforatâ, nigrâ, punctis lacteis pictâ, anfractibus convexiusculis, transversim liratâ, longitudinaliter striatâ, liris subdistantibus albo-punctatis, interstitiis lineis elevatis transversis ornatâ; anfractu ultimo angulato, basi convexiusculâ, cingulis nigro alboque articulatâ; aperturâ subrotundatâ; columellâ supernè sinuatâ, basi rotundatâ.*
*Hab.* Gindulman, island of Bohol, rocky ground (*H. C.*).

34. **Gibbula nivosa**, A. Adams. *G. testâ orbiculato-conoideâ, umbilicatâ, cinereâ, maculis nivosis subrotundatis pictâ, transversim sulcatâ, longitudinaliter substriatâ; aperturâ subrotundatâ; columellâ flexuosâ, basi rotundatâ.*
*Hab.* ——?

### Genus 18. MONILEA, Swainson.—*Talopia*, Gray.

1. MONILEA CALLIFERA, Lamk.

*Trochus calliferus*, Lamk. Hist. An. s. Vert. t. vii. p. 27.—*Trochus callosus*, Wood.

*Hab.* Philippines.

2. MONILEA CALYCULUS, Wood.

*Trochus calyculus*, Wood, Ind. Test. Suppl. pl. 2. f. 44.—*Trochus Belcheri*, Philippi.

*Hab.* Eastern Seas.

3. MONILEA BENZI, Krauss.

*Trochus Benzi*, Krauss, Sudafr. Moll. p. 99. t. 5. f. 32.

*Hab.* South Africa.

4. MONILEA NUCLEUS, Phil.

*Trochus nucleus*, Phil. Zeit. f. Malac. 1846.

*Hab.* ——?

5. MONILEA LENTIGINOSA, A. Adams. *M. testâ orbiculato-conicâ, umbilicatâ, albidâ, luteo fuscoque variegatâ; anfractibus rotundatis, cingulis subgranulosis confertis ornatis, ultimo rotundato, basi convexiusculâ, regione umbilicali excavatâ; columellâ supernè callosâ, basi dente terminatâ; labro intus lirato.*

*Hab.* Ilo Ilo, island of Panay, 7 fathoms (*H. C.*).

6. MONILEA KALISOMA, A. Adams. *M. testâ orbiculato-conoideâ, umbilicatâ, lutescenti, cingulis purpureo-articulatis ornatâ, cingulis subdistantibus, supremis granulatis, infimis planis; anfractibus planiusculis, ultimo subangulato, basi paulum convexâ, cingulis purpureo-maculatis insculptâ; columellâ supernè sinuatâ, basi dente terminatâ; labro intus lirato.*

*Hab.* ——?

7. MONILEA PLUMBEA, A. Adams. *M. testâ orbiculato-conoideâ, umbilicatâ, plumbeâ; anfractibus rotundis, cingulis granorum transversis in paribus dispositis ornatâ, basi convexâ; umbilico mediocri, intus albo; columellâ brevi, supernè sinuatâ, basi dente terminatâ; labro intus lirato.*

*Hab.* ——?

8. MONILEA LIRATA, A. Adams. *M. testâ orbiculato-conicâ, umbilicatâ, pallidâ; anfractibus paulum convexis, liris transversis elevatis distantibus, interstitiis decussatè striatis ornatis; anfractu ultimo angulato, basi convexâ, margine umbilici sulco cincto.*

*Hab.* ——?

9. MONILEA PUSILLA, A. Adams. *M. testâ orbiculato-conicâ, umbilicatâ, rubescenti, fusco variegatâ; anfractibus planiusculis, cingulis granorum transversum distantibus (circa quatuor)*

*ornatis, interstitiis transversim striatis; columellâ in medio sinuatâ.*
*Hab.* ——?

10. Monilea swainsonii, A. Adams. *M. testâ conoideâ, umbilicatâ, albidâ, nigro variegatâ; anfractibus planis, cingulis subgranosis, albo nigroque articulatis ornatis, ultimo subangulato, basi planiusculâ, cingulis rufo-articulatis ornatâ; columellâ basi tuberculatâ; labro intus lirato.*
*Hab.* ——?

### Genus 19. Margarita, Leach.—*Trochus,* sp. Auct.

1. Margarita helicina, O. Fabricius.

*Turbo helicinus,* O. Fabr. Faun. Grœnland. p. 393.—*Trochus neritoides,* Gmel.—*Turbo margarita,* Montag.—*Helix margarita,* Laskey.—*Phorcus margarita,* Risso.—*Trochus margaritus,* Gray.—*Margarita vulgaris,* Leach.—*Margarita arctica,* Gould.—*Margarita helicina,* Möller.—*Margarita margarita,* Brown.—*Margarita helicoides,* Beck.—*Turbo inflatus,* Totten.—*Paludina inflata,* Menke.
*Hab.* British Islands.

2. Margarita grœnlandica, Beck.

*Margarita Grœnlandica,* Beck; Sow. Conch. Illustr. f. 10.
*Hab.* Greenland.

3. Margarita umbilicalis, Brod. and Sow.

*Margarita umbilicalis,* Brod. and Sow. Zool. Journ. iv.; Conch. Illustr. f. 5.

4. Margarita striata, Leach.

*Margarita striata,* Leach, Append. Ross's Voy. to North Pole; Gray, Zool. Journ. vol. ii. p. 567.—*Turbo carneus,* Lowe.—*Margarita carnea,* Sow.
*Hab.* ——?

5. Margarita glauca, Möller.

*Margarita glauca,* Möller, Ind. Moll. Grœnland. p. .
*Hab.* Greenland.

6. Margarita undulata, Sowerby.

*Margarita undulata,* Sow. Conch. Illustr. f. 4.—*Turbo incarnatus,* Couthouy.
*Hab.* Casco Bay.

7. Margarita obscura, Couthouy.

*Turbo obscurus,* Couthouy, Bost. Journ. Nat. Hist. ii. 100. pl. 3. f. 2.
*Hab.* ——?

8. Margarita vahlii, Möller.

*Margarita Vahlii,* Möll. Ind. Moll. Grœnland. p. 81.
*Hab.* Greenland.

9. Margarita acuminata, Sowerby.
*Margarita acuminata*, Sow. Conch. Illustr. f. 7.
*Hab.* ——?

10. Margarita costellata, Sowerby.
*Margarita costellata*, Sow. Conch. Illustr. f. 15.
*Hab.* ——?

11. Margarita argentea, Gould.
*Margarita argentea*, Gould, Invert. Massachuss. p. 256. f. 164.
*Hab.* Casco Bay.

12. Margarita nitiligineus, Menke.
*Trochus nitiligineus*, Menke, Spec. Moll. Nov. Holl. p. .
*Hab.* Misamis, island of Mindanao, sandy mud (*H. C.*).

13. Margarita cinerea, Couthouy.
*Turbo cinereus*, Couthouy, Bost. Journ. Nat. Hist. ii. 99. pl. 3. f. 9. —*Trochus costalis*, Lovén.
*Hab.* ——?

14. Margarita sulcata, Sow.
*Margarita sulcata*, Sowerby, Conch. Illustr. f. 1.
*Hab.* Greenland.

15. Margarita solariiformis, Sowerby.
*Margarita solariiformis*, Sow. Conch. Illustr. f. .
*Hab.* San Nicholas, island of Zebu, sandy mud, 6 fathoms (*H. C.*).

16. Margarita bicarinata, Adams and Reeve.
*M. bicarinata*, Adams and Reeve, Moll. Voy. Samarang, pl. 11. f. 11.
*Hab.* Eastern Seas.

17. Margarita carinata, A. Adams. *M. testâ elevato-conicâ, perforatâ, fuscâ, liris transversis ornatâ, superioribus duabus costellis longitudinalibus decussatis, inferioribus planis, interstitiis longitudinaliter tenuissimè striatis; basi planiusculâ, cingulis concentricis, interstitiis radiatim striatis insculptâ; margine umbilici crenulato.*
*Hab.* Catbalonga, coarse sand, 8 fathoms (*H. C.*).

18. Margarita angulata, A. Adams. *M. testâ orbiculato-conicâ, latè umbilicatâ, albidâ, fusco variegatâ; anfractibus supra angulatis, transversim omnino striatis; basi convexâ, concentricè striatâ; umbilico magno, perspectivo.*
*Hab.* Sandwich Islands.

19. Margarita calostoma, A. Adams. *M. testâ conoideâ, crassâ, perforatâ, transversim valdè sulcatâ, albidâ; anfractibus subrotundatis, ultimo subangulato; aperturâ rotundâ, intus vividè violascenti iridescenti; umbilico callo, columellari subobtecto; labri margine argenteo.*
*Hab.* Juan de Fuco, Upper California.

20. Margarita cumingii, A. Adams. *M. testâ elevato-conicâ, cinereâ, lineis fuscis undulatis pictâ, latè umbilicatâ; anfractibus costellis transversis ornatis, ultimo tribus liris intermediis cincto, longitudinaliter elevatè striato; umbilico magno, cingulâ crenulatâ cinctâ, intus lineis radiantibus et transversis eleganter decussato.*
*Hab.* Philippines.

21. Margarita variabilis, A. Adams. *M. testâ orbiculato-conicâ, subdepressâ, latè umbilicatâ, pallidâ, fusco griseo alboque variè pictâ; anfractibus rotundatis, transversim valdè sulcatis; umbilico perspectivo, margine crenulato; basi planiusculâ; labio margine subcrenulato.*
*Hab.* ——?

22. Margarita balteata, A. Adams. *M. testâ orbiculato-conicâ, vix umbilicatâ, griseâ, fusco tessellatâ; anfractibus gibbosis, transversim valdè sulcatis; anfractu ultimo subangulato; basi planiusculâ, concentricè sulcatâ; columellâ curvatâ, vix truncatâ.*
*Hab.* ——?

23. Margarita tessellata, A. Adams. *M. testâ depresso-conicâ, latè umbilicatâ, lævi, cinereâ, regulariter griseo tessellatâ; anfractibus planiusculis, ultimo subangulato; basi convexâ; umbilico intus albido; aperturâ rotundâ, intus viridi-iridescenti.*
*Hab.* ——?

### Subgenus Photina, H. and A. Adams.

Shell smooth, subconical; spire depressed; axis covered by a smooth callus; columella ending in a simple point.

This section includes all the species of *Margarita* that are not umbilicated.

1. Photina tæniata, Wood.
*Trochus tæniatus*, Wood, Ind. Test. Suppl. pl. 5. f. 12.—*Trochus bicolor*, Lesson, Voy. de la Coquille.—*Margarita tæniata*, Sow.
*Hab.* East Falkland (*Don*).

2. Photina cærulescens, King.
*Margarita cærulescens*, King, Zool. Journ. vol. v.
*Hab.* ——?

3. Photina expansa, Sow.
*Margarita expansa*, Sow. Conch. Illustr. f. .
*Hab.* ——?

4. Photina sigaretina, Sow.
*Margarita sigaretina*, Sow. Conch. Illustr. f. 14.
*Hab.* ——?

5. PHOTINA VIOLACEA, King.
*Margarita violacea*, King, Zool. Journ. vol. v. p. 346.
*Hab.* ——?

6. PHOTINA LINEATA, Sow.
*Margarita lineata*, Sow. Proc. Zool. Soc.
*Hab.* ——?

7. PHOTINA NIGRA, A. Adams. *P. testâ depresso-conicâ, imperforatâ, solidâ, nigrâ, lævi; anfractibus subrotundatis, transversim sulcatis; longitudinaliter obliquè substriatâ; anfractu ultimo subangulato; regione umbilicali impressâ; callo albo obtecto.*
*Hab.* ——?

8. PHOTINA FUSCA, A. Adams. *P. testâ obliquâ, subconicâ, nitidâ, fusco variegatâ; anfractibus parum convexis, transversim sulcatis, ultimo subangulato; aperturâ subrotundatâ, intus viridi iridescenti.*
*Hab.* ——?

9. PHOTINA SANDWICHIANA, A. Adams. *P. testâ orbiculato-conicâ, imperforatâ, lævi, albidâ, viridi fuscoque maculatâ; anfractibus rotundatis, ultimo subangulato, apice roseo; aperturâ apertâ, orbiculatâ, intus viridi margaritaceâ; labio albo; umbilico callo albo obtecto.*
*Hab.* Mataineka, Sandwich Islands.

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Mr. Oswald then communicated the following remarks by Mr. Mack, on the fact of black eggs being laid by a white duck of the ordinary domestic breed:—

"The egg (observes Mr. Mack) which is herewith sent was laid by a white duck, one of two belonging to Mr. Dickinson of Mitcham, which stray during the day on the common, but are confined at night. The drake was lost about a month since, and then one of the ducks commenced laying black eggs, the other still continuing to lay white ones,—she laid ten or twelve and then ceased for some days; she has again commenced laying black eggs. The ducks are fed once a day with barley, at the time the other poultry are fed.

"Mr. Dickinson, showing the egg this morning to one of the guards on temporary duty on the Brighton rail at Croydon, he said he had a duck which laid the same colour, or even blacker, and that he had raised (at East Bourne) two broods of ducks from black eggs."

Haling Cottage, Croydon, May 24, 1851.

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## June 10, 1851.

John Gould, Esq., F.R.S., in the Chair.

The following papers were read:—

### 1. ON TWO NEW SPECIES OF BIRDS OF THE GENUS TÆNIOPTERA. BY PHILIP LUTLEY SCLATER, B.A., F.Z.S. ETC.

(Aves, Pl. XLI. XLII.)

TÆNIOPTERA ERYTHROPYGIA, Sclater. *T. nigrescens; vertice fronte gulâque canescente-griseis; maculâ secundariorum albâ; uropygio, abdomine toto crissoque, cum tectricibus caudæ superioribus et alarum inferioribus levitèr brunneo-rufis; rectricibus brunneo-rufis nigro terminatis; rostro pedibusque nigris.*

Long. tot. 9 unc. 5 lin.; alæ, 5 unc. 7 lin.; caudæ, 4 unc. 4 lin.; rostri à rictû, 1 unc.; à fronte, 6 lin.

*Hab.* in republicâ Equatorianâ.

Wings and interscapulars black, growing lighter towards the crown, and greyish white on front and throat; breast darkish grey; outer web of the last four or five secondaries broadly edged with white, forming a white mark on the wing; lower back and tail-coverts and whole body beneath below the breast, as also under wing-coverts, light brownish rufous; tail-feathers the same, but broadly tipped with black. For the loan of this and the following species I have to thank Mr. Edward Wilson, who received them from M. Verreaux of Paris. I was at first inclined to refer both species to the genus *Agriornis* of Mr. Gould, but having had through Mr. G. Gray's kindness an opportunity of examining the type of that form, *Agriornis lividus** (Kittlitz), I now consider them better placed in the present genus *Tænioptera*, with which they agree in all their distinctive characters.

TÆNIOPTERA STRIATICOLLIS, Sclater. *T. suprà saturatè fumoso-brunnea; uropygio paululùm rufescente tincto; superciliis rufescente-albidis; pennis caudâque nigris; secundariis tertiariisque levitèr brunnescente marginatis; infrà levitèr brunneo-rufa; gutture toto colloque albis nigro striatis; rectricibus remigibusque brunneo-rufis nigro terminatis; rostro pedibusque nigris.*

Long. tot. 9 unc. 5 lin.; alæ, 5 unc. 3 lin.; caudæ, 4 unc.; rostri à rictu, 1 unc. ½ lin.; à fronte, 7½ lin.

*Hab.* in republicâ Equatorianâ.

Above dark smoke-brown; an obscure whitish line from the bill to the top of the eye; quill-feathers brown-rufous, outer margins and ends black; secondaries, tertials, and wing-coverts nearly black, margined with light brown; beneath brown-rufous; chin, throat and neck white, with longitudinal striæ of black; tail-feathers brown-rufous, the two outer broadly tipped with black; the rest have also the outer web black, except the two medial, which are wholly black.

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* *Tyrannus gutturalis*, Voy. de la Favorite, Ois. t. 11.

This species is of the same form as the former, from which it may be distinguished by its shorter and weaker beak, and the want of the rufous colouring on the rump and upper tail-coverts, as also by the conspicuous striæ on the neck and throat.

## 2. NOTES ON AN UNDESCRIBED SPECIES OF TAILOR-BIRD.

### BY DR. NICHOLSON.

It may appear irregular to use what has been meant and applied as a specific name, as a generic one, but then that name appears to me to include, and to be indiscriminately applied to, two or three distinct birds, as we may gather by looking at the accompanying sketch, by the examination of the species described by Colonel Sykes as inhabiting the Dukhun, and by reading the following description, taken from Forbes, 'Oriental Memoirs,' p. 34. vol. i., under the name of *Motacilla sutoria*:—"The Tailor-bird resembles some of the humming-birds at the Brazils in shape and colour; the hen is clothed in brown, but the plumage of the cock displays the varied tints of azure-purple, green and gold, so common in those American beauties." Often have I watched the progress of an industrious pair of Tailor-birds, in my garden, from their first choice of a plant, until the completion of the nest, and the enlargement of their young.

Now, it is evident either that Mr. Forbes alludes to a distinct and an uncommon species, which I have never met with, or else he must have mistaken the common *Cinnyris* or Sun-bird representing the Humming-birds, and both sexes of which he has generally described above. But then the *Cinnyris* builds a common-shaped nest in the fork of a branch, in fashion resembling that of the humming-birds.

This is a resident bird, not very conspicuous, as it keeps hopping about among the brushwood and plants. It has a loud, short, and not unmelodious song; its general cry is 'wheet, wheet, wheet,' often repeated; but its alarm-cry is like 'cheertah, cheertah, cheertah.'

I have found its singular sewn nest containing eggs or young at all seasons of the year, in May and in November; and this may be owing to the vegetation of gardens being always kept up by means of artificial irrigation; for cultivated spots seem its favourite, if not exclusive resort at least in the north of India. Though no doubt it haunts suitable jungles, I never observed it there, nor ever discovered its nest so situated; but I have found many nests in my gardens, both at Surat and at Raghote, as well as in Cutch. It seems to prefer the leaf of the Bringal (*Solanum esculentum*), or that of the *Cucurbita octangularis*, for the purposes of nidification; and it lays four small white eggs, marked with faint dark spots at the larger end. After selecting a fitting leaf, it proceeds by means of its feet and beak to draw the edges together, perforating holes therein, and securing their proximity by threads of cotton, with bunches at the end to prevent their giving way. Then the nest is constructed inside the leaf, now forming a sort of corve, with cotton; the entrance is at the top, and the nest seems small in proportion to the bird. If this bird should prove a distinct species, I would suggest the name of *Sutoria agilis* for it.

Weight of the male 2½ drachms.

Length from bill to tail 5¼ inches. Alar extent 6½ inches.

Head: bill long, slender and curved towards the point. Culmen slightly divides the frontal feathers, and is nearly on a line with the top of the head: there is an almost obsolete notch at the end of the upper mandible. Tongue short, slightly extensible, and divided into several filaments at the point. Gape wide, commissure under the eye; a small denuded spot above the commissure. Nostrils basal, pyriform, under a tegument; some small bristles and feathers reflexed from the canthus of the eye towards the bill and over the nares. Eyes small. Iris greenish yellow. Eyelashes edged with small feathers. Eyelids bare. Four remarkable (but inconspicuous) bristles, like feathers, project from the back part of the occiput.

Wings short and perfectly rounded; first quill only half as long as the second; fourth and fifth quills are longest; the second, third and fourth graduated; the first, third, fourth, fifth, sixth and seventh quills are emarginate on the outer web.

Tail of twelve graduated feathers, the two outer being the shortest; under-coverts are long.

Legs long, the tarsus ⅞ths of an inch; the outer toe longer than the inner. Hallux very strong, and as long as the outer toe, with a large pad beneath the base, its claw the largest; the tarsus is covered with seven scales in front and one entire behind; two large scales lie across the front of the foot; the claws are curved and sharp.

Contents of stomach a mass of insect exuviæ.

Colours: all above dull green, tinged with ash, light brown towards the end of the tail and quills, which are lighter on the edges. Two-thirds of the front breadth of the neck, round the eye, the breast, belly and thighs (except a chestnut spot on the hallux) are silver-white; there is, besides, a remarkable spot on the neck, of a brown colour, as if the white feathers had been deranged, showing the roots of a different colour. Bill ash-brown or horn-colour, the lower jaw lighter, and both lighter on the edges, as also are the legs and claws of the same colour; forehead of a fine chestnut; crown of olive-brown.

## 3. NOTES ON A NEW SPECIES OF ARTAMUS, FROM INDIA.

## BY DR. NICHOLSON.

(Aves, Pl. XLIII.)

These birds are only found in very thick jungles among the brushwood, where they are always moving about, and are shot with great difficulty, and even then, if not killed outright, they are so tenacious of life, that they creep into the first hole or crevice they come to. The only note I ever heard was like 'chick, chick.' I think they are residents, but the few I have seen just appear and are lost again in a moment, so that I know little of their habits; the one figured here had one leg and both wings broken, and still crept into the hole of a jerboa-rat, from which I dug it out dead.

*Male: weight $6\frac{1}{2}$ oz.*

Length from bill to tip of tail $7\frac{2}{8}$ inches. Alar extent 10 inches.

Head large. Bill strong, narrow and sharp, gently arched on the culmen; a distinct notch near the tip of upper mandible; gape wide. Tongue horny and divided at the point. Nostrils basal, small. Eye rather small. Iris of a silvery colour, tinged with yellow.

Wings rounded; first quill very short; third longest; second, third and fourth quills emarginate on outer web.

Tail short, and nearly even at the end, of twelve feathers, $2\frac{3}{4}$ inches long.

Tarsus strong. Hallux and claw stronger than the other toes, and as long as the inner toe, and has a large pad at its base; the outer toe is shortest; the claws are much hooked.

Contents of stomach were a few grains of *Holcus spicatus* and the exuviæ of insects.

Plumage is soft and loose.

Colours: the whole top of the head is covered with a cap of black. Bill lead-colour at base and black at the point. The chin, the breast, and all underneath white; the body all above of a leaden colour. Quills and tail of a light black, edged with light on both webs; the outer web of the outer tail-feather is white, as well as the tips of the first five on each side. Feet and legs black.

I propose for this species the name of *Artamus cucullatus*.

## 4. OBSERVATIONS ON THE BREEDING OF THE NIGHTINGALE IN CAPTIVITY.

### BY H. HANLEY, SERGEANT-MAJOR 1ST LIFE GUARDS.

Being of opinion that any bird which breeds in this country in a wild state, might, by studying its habits, be brought to do so in a state of captivity, I made preparations during the winter of 1844 for trying the Nightingale, which I considered to be the most retired in its habits of any of our summer visitants. I had a cage made, 4 feet long by 3 feet high, the back, ends and top solid, with a wire front, in which I placed a small Scotch fir-tree, planted in a flower-pot; to each end of the cage I attached a common-sized canary's breeding-cage, communicating with the large cage by a hole about 4 inches square. I broke a new birch-broom, and filled up the cages at each end, to make them resemble as near as possible the bottom of a thick hedge, and then put in a plentiful supply of withered oak-leaves and moss, of which the nightingale forms its nest, covering the fronts of the two small cages with green glazed calico: I placed the cages high up against a wall facing a landing-window. The following spring, that is, about the latter end of April 1845, I directed a bird-catcher (Blake, of John-street, Tottenham-court-road), who goes to Watford every season to catch nightingales, to bring me a cock and hen bird which had paired naturally; he did so, and, fortunately, they meated off very readily. By "meating off," I mean that such birds as live on insect food will not peck at dead food until taught to do so, which is effected by enclosing meal-worms in a small glass tube, corked up at each end, and then placing the tube in their food; on pecking at the worm the beak slips off the glass amidst the food, which they swallow, and will afterwards go to it without the aid of a tube. On finding my birds feed freely in the small cage, in which until then I had confined them, I turned them into the place I had fitted up for them, and was much gratified, about a week afterwards, to observe the hen bird flying about with an oak-leaf in her beak. She made her nest in one of the small cages at the end of the large one; laid four eggs, of which she hatched and brought up three young ones. During the time she was sitting, the cock sang as well and as loud as I ever heard one in a wild state: when the young were excluded he left off singing, and was most assiduous in assisting to feed and rear them.

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## June 24, 1851.

J. E. Gray, Esq., F.R.S., Vice-President, in the Chair.

The following communications were made:—

### 1. On a new genus of Anomiadæ, in the Collection of Mr. Cuming.

### By J. E. Gray, Esq., F.R.S., V.P.Z.S., P.B.S. etc.

### Tedinia.

Shell irregular, loosely lamellar; upper or right valve with a broad cardinal groove, and with three muscular scars, the upper small, oblong near the cartilage, the other two large, subcentral, upper subtrigonal, lower oblong, transverse, united by a nearly straight medial cross line; left or attached valve with an elongated, triangular, convex cardinal ridge, with a deep groove on each side, having the cartilage on its inner edge, with two muscular scars, one small, half oblong near the cardinal ridge, the other large, subcentral, subcircular, and with a roundish circular hole near the upper edge, with a slight impression showing the grooves to the margin some distance from the cardinal ridge; the plug shelly, fixed into and exactly fitting the hole, with a triangular base sunk into the surface, commencing from the apex of the shell on the outer surface, and formed of erect shelly longitudinal plates within.

The shell has the plug and much the external appearance of the subgenus *Pododesmus*, but differs from it and all the other *Anomia-*

*dæ* in the following particulars: 1. That the line which indicates the junction of the two edges of the sinus which forms the perforation, instead of being placed on the side of the ridge which supports the cartilage, is placed at a considerable distance from it; 2. The sides of the sinus are firmly soldered together, leaving only a circular hole; 3. The support of the cartilage, instead of being merely a ridge or process, here forms a large elongated subtriangular talus, like that found in the genus *Ostrea*; 4. It differs greatly in the number and form of the muscular scars; the two large ones in the free valves are placed as in the genus *Placunanomia*, and there is a third anterior one in each valve not found in any genus of the family, and very unlike the third scar of the genus *Anomia*. I know only of a single specimen of the genus, which is in the collection of Mr. Cuming, who believes that it came from California. It may be called *Tedinia pernoides*; subquadrangular, reddish, subsquamose, obscurely radiated, internally reddish brown.

## 2. DESCRIPTION OF A NEW SPECIES OF BULIMUS FROM AUSTRALIA. BY LOVELL REEVE, F.L.S. ETC.

(Mollusca, Pl. XII.)

BULIMUS MACONELLI. *Bul. testâ acuminato-oblongâ, tenuiculâ, subobliquè convolutâ, spirâ brevi, suturis rudibus, anfractibus quatuor ad quinque, minutè et creberrimè spiraliter undulato-striatis, ultimo valdè inflato, columellâ subcontortâ, aperturâ subamplâ, labro simplici; brunneâ, maculis parvis punctisque nigris undique pictâ et seriatim fasciatâ, maculis infra suturas regularibus, aperturæ fauce fuscescente.*

*Hab.* Brisbane, Moreton Bay, Australia.

This fine species has been forwarded to me from the Manchester Museum of Natural History, with the above name attached to it in manuscript, by Captain Brown. It is chiefly remarkable on account of its absolute similarity in texture, in colour, and in pattern, to *Helix Falconari* of the same locality. It appears to differ in nothing but in that difference of convolution which characterizes the respective genera. Mr. Cuming possesses an exactly similar un-umbilicated specimen; and none of several examples of *H. Falconari*, with which it has been compared and which are all largely umbilicated, present any indication of an intermediate form. It is the first instance on record of a strictly typical richly painted *Bulimus* and *Helix* agreeing in colour, in pattern, and in all respects save that of form.

## 3. OBSERVATIONS ON THE DENTITION OF THE TIGER BEETLES. BY J. O. WESTWOOD, PRES. E.S., F.L.S. ETC.

Mr. Westwood directed the attention of the meeting to the necessity which existed of a more precise examination and description of the diversity in the dentition of the mandibles of insects, especially

Hymenoptera and Coleoptera, than had hitherto been bestowed thereon. In the higher orders of animals so much importance had been given to this character, that it was remarkable that, in general, entomologists contented themselves with examining, describing, and figuring a single mandible as affording a sufficient diagnosis of the structure of both of the mandibles, overlooking the necessary result which arose from the circumstance of the horizontal instead of perpendicular action of these organs in insects, and the variation in the position of the teeth which such action must necessarily induce. In general, indeed, the teeth of the mandibles were not greatly developed, and there was a general similarity between the two jaws; but when these organs are of an increased size, and especially when the extremity of one jaw laps over that of the opposite one, a diversity in the dentition will necessarily exist. It was likewise necessary to examine the mandibles of both sexes of a species, as it occasionally happened that there was considerable difference in their dentition. These observations were illustrated by the case of the Tiger Beetles (*Cicindelidæ*), which offered a much greater range of diversity in their dentition than had hitherto been supposed. It was chiefly to the genus *Megacephala* that Mr. Westwood directed the attention of the members.

In the type of that genus (*Megacephala senegalensis*, Latr., Dej., *Cic. megalocephala*, Fabr.), an apterous species from Senegal, the right mandible of the male has two large, nearly equal-sized, acute teeth in the middle of the inner margin, the extremity being hooked and very acute; there is also a small tooth at the base of the large, broad, compound basal tooth. The left mandible is nearly similar, except that the two teeth in the middle of the inner margin are unequal in size, the upper one being the smaller of the two. The figure of the jaws of this species, given in the Crochard edition of the Animal Kingdom (Ins. pl. 16. f. 2 *a*), is very incorrect, being apparently reversed. The dentition of the female is almost identical with that of the male. In the allied bat-winged African species, *Megacephala 4-signata*, Dej., from Senegal, the toothing of the mandibles is similarly arranged, but the two teeth in the middle of the inner margin, in both sexes, are broad and obliquely truncate. In the male of *M. euphratica* (which has recently been observed to extend from Spain to India), the teeth are nearly as in *M. senegalensis*, except that the subapical tooth of the left mandible is considerably smaller. But in the species lately received from the north-west of Australasia (*M. Australasiæ*, Hope), we find a different arrangement as well as number in the teeth, the right mandible having three teeth in the middle of the inner margin (exclusive of the small tooth* at the base of the upper side of the large compound basal tooth), the upper one small, the middle one very small, and lower one large, all being acute. The left mandible has also three teeth in the same position,—the upper one very small, and the middle and lower one large and nearly equal in size.

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* This small tooth exists in all the species, and in both sexes; and as it appears to form part of the great basal tooth, I have omitted noticing it in the descriptions given in this paper.

On turning to the New-World species of the genus, we find four variations in the dentition of the mandibles; the group of pale species typified by *M. æquinoctialis*, Dej. (*bifasciata*, Brullé), corresponds almost identically in the dentition of both sexes with the old type (*M. senegalensis*), as described above, the right mandible having two equal-sized large acute teeth in the middle of the inner margin, and the left one also two, the upper one being very small. For this group I have proposed the subgeneric name of *Ammosia*, in allusion to their habits, which differ materially from those of the other species.

A black-coloured species from South America (*M. sepulchralis*, Fabr., *M. variolosa*, Dej.) differs from the *Ammosiæ* in the left mandible, while the inner margin has only one tooth in the middle, of considerable size, and exhibiting on its *under* side a minute tooth, being all that remains of the large middle tooth of the left mandible of the *Ammosiæ*. This species is the type of Mr. Hope's subgenus *Anaira*.

Another very fine Brazilian species (*M. testudinea*, Klug) differs in the dentition of the sexes in a more striking manner than any of the preceding. The right mandible of the male is long and sickle-shaped, with a small tooth obliquely truncated below the middle of the inner margin, and between this and the tip of the jaw is a minute acute tooth. The left mandible has two teeth on the inner margin above the middle, the lower one broad and acute, but rather obliquely truncate, whilst the upper one is very small. The right mandible of the female, on the contrary, has two very large equal-sized teeth in the middle of the inner margin, whereas the left jaw in this sex is quite similar to that of the male.

There still remains a numerous group of American species (the type of which is *Cic. Carolina*, Linn.), which differ from the rest of their continental brethren in possessing three teeth in the middle of the inner margin of each jaw, thus resembling the Australian species above noticed, and hence I proposed the name of *Tetracha*, or four-toothed, for this group, counting the acute apical portion of the mandible as a fourth tooth. In general, in both sexes, the tooth next below the apex of the jaw is equal in size to, or even larger than, the apical part or tooth itself (thus differing from the Australasian species), and the middle of the three teeth is smaller than the rest; but in the left mandible in the males the tooth below the apical tooth is even still larger, whilst the middle tooth is much smaller, and the lower tooth is quite minute. In the female, on the contrary, the middle one of the three teeth of the inner margin is rather larger than the upper one (which is only of a moderate size), and the lower one is small.

From these particulars (united with the peculiarities of colouring, geographical range and habits of the species) we are enabled to propose well-founded subgenera, a task which has hitherto been considered hopeless in the genera of *Cicindelidæ*. The Old-World species thus seem to form only one group, divisible however into still smaller sections from the presence or absence of wings, and form and colouring of the elytra; the Australian species stands alone; and the New-World species constitute the four following subgenera:—

AMMOSIA, Westw. Type, *M. bifasciata*, Brullé.

————, Westw. Type, *M. testudinea*, Klug.

ANAIRA, Hope. Type, *M. sepulchralis*, Fabr.

TETRACHA, Westw. Type, *M. Carolina*, Linn.

## July 8, 1851.

In consequence of the death of the President, no meeting was held on this day.

## July 22, 1851.

John Edward Gray, Esq., F.R.S. &c., Vice-President, in the Chair.

The following papers were read:—

### 1. ON THE LARGEST KNOWN SPECIES OF PHALERIDINE BIRD. BY CHARLES LUCIEN, PRINCE BONAPARTE.

(Aves, Pl. XLIV.)

Among the new additions lately made to the British Museum I was struck by one of the *Alcidæ*, which I had never seen before, and which was very properly placed close by two beautiful specimens of my singular *Ceratorrhina*, also lately added to the zoological treasures of the English nation. The bird which is the subject of the present note is evidently the *Labrador Awk* of Latham, so miscalled from the erroneous impression that it came from those eastern shores of America, but too well described not to be recognized. Gmelin compiled his *Alca labradora* from the description of Latham, and all those who did not follow him blindly, have referred that indication to an immature state of the Razor-bill (*Mormon arctica*), a course in which they were led by geographical consideration only. Although our bird belongs to the family of the *Alcidæ*, it is not even an *Alcine*, as the Razor-bill, but, as is shown by the nakedness of the cere, it belongs to the other subfamily, or *Phaleridine*, of which it is at present the largest known.

In its family it is certainly allied to *Ceratorrhina*, but well deserving to constitute a genus by itself. The bill still more compressed, is in fact much more angulated beneath, and covered at the base, not by a bony process or *horn*, but by a soft membrane or *saddle*, which leaves a simple slit along the margins for the impervious nostrils.

### Genus novum PHALERIDINARUM.

### SAGMATORRHINA, Bp. Saddle-Bill.

*Rostrum duplo longius quam altum; maxilla ad basin recta cerâ maximâ induta, apice incurva; mandibula ultra medium statim adscendens, angulum obtusum constituens; nares lineares, marginales.*

As the bird has been so well described by Latham, Mr. G. R. Gray very properly suggests that its specific name should be taken from that author.

SAGMATORRHINA LATHAMI, Bp. *Maxima; nigricans; subtus albido-fuliginosa: rostro pedibusque rubris; cerâ palmisque nigris.*

Long. 16 poll.; rostr. 2 poll. long., 1 altum, $\frac{5}{8}$ latum ad basin, $\frac{3}{8}$ ad med.; alæ $7\frac{1}{2}$ poll.; cauda $3\frac{1}{2}$; tars. $1\frac{1}{4}$; digitorum longissimus $2\frac{3}{8}$.

This species is the largest of the subfamily, which is well known to contain the dwarfs of the Water birds; it is one-third larger than *Ceratorrhina monocerota*, of which it has precisely the colouring, wanting only (at least in the state we have it) the little white feathers above the eye and at the corners of the mouth. The proportions of wings, tail, feet and toes are the same: the bill and toes must have been reddish; the cere and membranes black. Like the *Ceratorrhina*, it seems to be confined to the North-western Arctic regions of America; and we are led to believe it does not extend to the Siberian shores, from the circumstance of its not having been noticed by Russian naturalists.

The well-marked family of *Alcidæ* forms, with the *Colymbidæ*, *Podicipidæ* and *Spheniscidæ*, the great section of the *Urinatores*, which, with the *Lamellirostres*, constitutes alone the Order *Anseres*, as it must be restricted to the *web-footed Præcoces* of Prof. Owen. The other two sections, *Longipennes* and *Totipalmi*, constitute now the Order *Gaviæ* of my Conspectus, being, in fact, *web-footed Altrices*, which have no more right to remain in *Anseres* than the *Pigeons* among the *Gallinæ*,—than the *Herodiones* among the *Grallæ*. The passage between my *Gaviæ* or *web-footed Altrices*, and my *Herodiones* or *grallatorial Altrices*, is beautifully exemplified by that most remarkable bird the *Balæniceps*, whose affinity with *Pelecanidæ* has so well been pointed out, and even exaggerated, by Mr. Gould. On the other hand, it is no less obvious that the *Longipennes*, some of which, with tumid bills, have been considered as *Sea-Pigeons*, connect them (the *Gaviæ*) with the *Columbæ*; whilst between the two subclasses the connections and correspondence (affinity and analogy) take place in different degrees and by different means and sides, chiefly as exemplified in the following table:—

## AVES.

1. ALTRICES (Insessores).
    1. Psittaci.
    2. Accipitres.
    3. Passeres.
        - *a.* Oscines.
        - *b.* Volucres.
    4. Columbæ.
        - *a.* Inepti.
        - *b.* Gyrantes.
    5. Gaviæ.
        - *a.* Totipalmi.
        - *b.* Longipennes.
    6. Herodiones.
2. PRÆCOCES (Grallatores).
    8. Struthiones.
    9. Gallinæ.
    10. Anseres.
        - *a.* Lamellirostres.
        - *b.* Urinatores.
    7. Grallæ.
        - *a.* Alectrides.
        - *b.* Cursores.

## 2. On the Change of Colour in a Chamæleon (Chamæleo vulgaris). By H. N. Turner, Jun.

Notwithstanding that the peculiarity of the Chamæleon in changing its colour is so universally known, and that an illustrated work on the subject was published by Van der Höven, I have thought that a careful record of the varieties of tint, presented by the specimen which has lived for some time in my possession, might prove serviceable to the naturalist if compared with similar observations upon other species and upon the same one under different circumstances, and might also assist in the determination of the means by which it is effected, the influences by which it is regulated, and the objects which it serves in the œconomy of the animal.

Its general tints vary between different shades of brown, olive, yellow, and light green, the last-named being the most rarely observed, and the yellow being the tint usually assumed when the animal has been hidden from the light. This is the colour it always presents if taken for inspection at night, and when brought into the influence of lamp-light it appears at first almost white, but may soon be seen to darken and some of the markings to appear. The side that is next the light will change rather sooner than the other, the changes being always gradual. It has three distinct sets of markings, the first to appear being two ranges of irregular distant elongated spots, which may appear either as a dark tint upon the ground-colour when that is light, or a light one if it be dark. These marks are never entirely absent when either of the other sets is present, although sometimes but faintly discernible.

The other two sets of markings consist of an irregular marbling, and a number of full round spots; the latter never appear otherwise than as dark upon the ground-colour, and the marbling, which is generally also dark, only occasionally appears a little lighter than the ground-colour, and then of a different tone; either may be visible without the other, or both may be distinctly traceable. Sometimes the marbling will be apparent together with such of the spots as are placed within its intervals, those upon the surface occupied by the marbling being amalgamated with it.

When the general colour is light yellow or pale greenish, which is the case if the animal be suddenly brought into the light, the elongated spots, which form two rows on each side, will begin to appear of a very delicate purple tint. After that the marbling gradually shows itself, and the general tint begins to darken; when some time has elapsed a brown colour is assumed, and the elongate spots, at first purple of a darker tint than the yellow ground-work, are seen to be brown, of a lighter and rather richer tint than that which now pervades the whole. These distinctions may go on increasing, may then decrease and again increase; the spots may appear, may come and go with different degrees of intensity, so that the variety of appearances presented is almost indefinite. When visited in the day-time, the colour is generally brown, sometimes without markings, generally with the elongate spots of a lighter tint, and the marbling or the round spots, or both, more or less apparent. Occasionally it presents a uniform dull olive, and then has no markings. Sometimes it is of a light drab colour, with the different marks faintly indicated. The ventral series of prominent scales remains constantly white, as stated by Van der Höven, not participating in the changes of the surrounding parts.

This author does not in any of his plates represent the longitudinal rows of markings as a decided dark upon the ground-colour, nor is the marbling anywhere clearly shown as pervading the whole body; neither does he give the deep brown tint with the marbling as a dark, and the longitudinal rows of spots definitively marked as a light.

I have never seen my specimen present anything like the appearances delineated in his plates 4 and 5, probably because I have not irritated it.

It has generally been imagined that the purpose of this singular faculty accorded to the Chamæleon is to enable it to accommodate its appearance to that of surrounding objects, but the observations of Van der Höven seem to negative that idea, and the few experiments I have made with that view have not led to any such results. The box in which it is kept is of deal, with a glass at the top and a piece of flannel laid at the bottom; a small branching stick being introduced by way of a perch. I have introduced at various times pieces of coloured paper, covering the bottom of the box, of blue, yellow and scarlet, but without the slightest effect upon the appearance of the animal. Considering that these primary colours were not such as it would be likely to be placed in contact with in a state of nature, I next tried a piece of green calico, but equally without result. The animal went through all its usual changes, without their being in any way modified by the colours placed underneath it. The general tints approximate, as may readily be observed, to those of the branches of trees, just as those of most animals do to the places in which they dwell; but I have never seen the faculty of changing called into play with any apparent object. It is only when the light is removed that the animal assumes a colour which absorbs but little of it.

Regretting that I have not been able to attain any more definite conclusions, I offer these few remarks, hoping that to some naturalist, who may undertake the investigation of these singular phænomena, they may prove not to have been thrown away.

Pimlico, July 1851.

## 3. On the Arrangement of the Edentate Mammalia.

### By H. N. Turner, Jun.

In offering to the Society a summary of my observations on the craniology of the Edentate order, I have not so great a number of hitherto unrecorded facts to bring forward as in some of my former communications. The very remarkable modifications which this order is seen to present, not only in comparison with the rest of the Mammalian class, but also among its own members, and the wonderful variety of extinct gigantic species which the New World has yielded to research, have caused the osteology of the group to be more minutely investigated; while the small number of species and the striking external differences which they exhibit, have left but little room for doubt in the minds of naturalists as to their true arrangement. I will therefore simply point out such of the cranial peculiarities as seem to be characteristic of the order and of its families and genera, dividing it, as appears to me necessary, into five families, since the two forms inhabiting the Old World differ so much from each other, and from the three groups into which those of the New World naturally divide themselves, that although each consists of a single genus, and one of but a single species, it seems requisite that both should stand distinct. It will also be necessary to remodel the genera of the Armadilloes, and to define them anew by their external characters as well as by those of the skull, since the presence of a tooth in each of the intermaxillary bones of a single species of the family has prevented the essential similarities and differences from being duly appreciated.

Although some few naturalists may still associate this order with the true Ungulata, for the sake of keeping the divisions of the class within the predetermined number five, I think that most of those who have given particular attention to the subject will agree, that so natural and strongly-marked a group is well worthy of isolation, which was the opinion of Linnæus and Cuvier, although the former wrongly associated with it a few genera belonging properly to other groups.

The characters possessed in common by the members of so diversified an order, must be expected to be comparatively few; those which I have observed in the skull are as follows:—

The tuberosity of the maxillary bone is articulated by the whole of its upper surface to the frontal and orbitosphenoid bones.

The zygoma is flat and straight, projecting at once outwards and forwards, its articulating surface being more or less confluent with a concavity at the inner side of it which forms a portion of a more or less elongated cone, whose apex would point backwards. In such forms as have the articulation longitudinal, the glenoid surface is distinguishable from that of Rodents by its posterior termination, which is *not* a thin free edge like the anterior.

The alisphenoid bone never extends high, so that the pterygoid ridge forms its upper boundary, or even extends above it.

The absence of enamel in the teeth, when they exist, must also be named among the cranial characters.

### Fam. 1. BRADYPODIDÆ.

The intermaxillary bones confined to the lower part of the nasal opening; the maxillary bones provided with simple teeth, shortened, their malar processes much pushed forwards upon them, and the molar series converging behind; the posterior palatine foramina replaced by a series of minute openings extending the whole length of the palate; the malar bone having a descending masseteric process transversely compressed, longitudinally extended, and with a distinct superadded process arising between its frontal and zygomatic processes; the foramen rotundum distinct, and opening exteriorly at the base of the pterygoid process some distance below the spheno-orbital foramen and anterior to the foramen ovale; the zygoma straight and trigonal, its origin thick and extensive, reaching back quite to the posterior part of the squamous bone; the mastoid bone with a wide digastric fossa, and a strong thick styloid process, terminating in a circular concavity for the reception of the stylohyal bone; the lower jaw widened anteriorly with an extended symphysis.

It must be observed that the superadded process of the malar bone is peculiarly characteristic of this family, and is quite distinct from any of the processes of that bone to which special names have been assigned. It is situated between the frontal or postorbital and zygomatic processes, both of which seem also to exist in a more or less rudimental form in most of the known species; and when the latter is wanting as in the genus *Cholœpus*, the fact that the new process stands aloof, above the zygoma, is enough to prevent its being taken for the zygomatic process, which in all mammalia possessing a complete zygomatic arch either abuts simply against the extremity of the zygoma, or more generally seems to support it from beneath.

The zygomatic process is well developed in the *Megatherium*, and completes the arch, leaving the other, which might be called the supratemporal process, projecting above it. In *Mylodon robustus* the frontal process is reduced to a slight angle upon the base of the supratemporal process. In the *Scelidotherium* the process existing above the zygomatic process appears to be broken off, but the obliquity of its base renders it improbable that it would be the true frontal process so largely developed.

The circular pit for the attachment of the stylohyal bone is precisely similar in the Sloths to that in the large fossil genera, and it is somewhat remarkable that Prof. Owen, while describing the character in these extinct forms, should have made no allusion to its existence in the recent Sloths, even though Cuvier expressly points it out. The tongue is largely developed in this family, and the living sloth may be seen to make great use of it in taking food into its mouth, as was observed by Mr. Ball, in a short communication published in the 'Proceedings' some years back. On the other hand, it is long and slender in the insect-feeding tribes, so that the maximum degree to which it was developed in the *Glossotherium* is certainly no indication that such was the food of that remarkable genus.

### CHOLŒPUS, Illiger.

Intermaxillary bones small, produced anteriorly; postorbital process well-developed; malar bone with a well-marked frontal process, but no zygomatic process, the supratemporal process projecting backwards or bent a little upwards; pterygoid bones inflated; crotaphite impression approaching near to the occipital ridge; tympanic bone reduced to a simple ring; lower jaw produced anteriorly, straight below, its condyle depressed; teeth $\frac{5-5}{4-4}$, simple, rounded, the anterior ones in each jaw enlarged, trigonal.

*C. didactylus.*

### BRADYPUS, Gray.

Intermaxillary bones reduced or wanting; postorbital process slightly developed; malar bone with the frontal and zygomatic processes slightly marked, the supratemporal process rising obliquely; pterygoid bones inflated; crotaphite impression terminating at a considerable distance from the occiput; tympanic bone well-developed, forming a bulla; lower jaw with a flattened square process in front, deep posteriorly, the lower outline convex, the condyle elevated; teeth $\frac{5-5}{4-4}$, simple, rounded, the anterior ones similar, small in the upper jaw.

*B. crinitus.*

In addition to the character of the pterygoids, which, in the absence of actual knowledge, might possibly have belonged to age or sex, I find this species to be clearly distinguishable from those of the next genus by the great distance that intervenes between the posterior termination of the temporal fossæ and the occiput, which is much greater in the old specimens even than in the young of the genus *Arctopithecus*. The occiput also differs from them in being proportionally smaller, of a rounder form; the digastric fossæ converging a little superiorly, instead of diverging as in the other genus. The lower jaw also presents a character more decided than the anterior production which Mr. Gray points out in his paper on the genus *Bradypus*: it is much deepened behind, rendering the lower outline very convex. And further, there are certain characters pointed out by Cuvier in the 'Ossemens Fossiles' which appear to be constant, so far as I have been able to observe, as it is only in young specimens that the sutures are discernible. They are, first, that in this species, the *Aï à collier*, the nasal bones are bevelled towards the middle posteriorly, so that they form a point between the frontals, while in the other species they are bevelled in the opposite direction, the frontals descending between their extreme points. Secondly, that the palatine bone forms but a narrow slip within the orbit, and the alisphenoid bone occupies a much larger portion of the temporal fossa than in the other species.

The skull spoken of by Mr. Gray as being taken from a skin, presents characters intermediate between the other one and that upon which the *B. affinis* is founded, therefore I refrain from inserting the latter as a species until further evidences are obtained.

### ARCTOPITHECUS, Gray.

Intermaxillary bones short and small; postorbital process slightly developed; malar bone with the frontal and zygomatic processes slightly marked, or the former wanting, the supratemporal process rising obliquely; pterygoid bones compressed and simple; crotaphite impression extending to very near the occipital ridge; tympanic bone well-developed, inflated; lower jaw with its inferior outline concave posteriorly, its condyle elevated; teeth $\frac{5-5}{4-4}$, simple, rounded, the anterior ones similar, small in the upper jaw.

### A. GULARIS. *Aï à dos brulé.*

A broad patch of soft yellow hair between the shoulders, and a black line running through it down the back; the upper anterior molars proportionally larger, and the second less, than in the following species; the occiput again affords us a very good distinction, as it is much wider and not so deep as in the following species, and the foramen magnum not so large. Two skulls in the British Museum present these characters, and evidently belong to adult, probably aged, individuals; that of the skeleton, also from Bolivia, seems referable to the other species.

### A. MARMORATUS.

Fur everywhere more or less lengthened, no yellow spots, dorsal line grey brown; anterior upper molars very small, the next rather larger than those which follow; occiput deeper and narrower than in the preceding species, its foramen larger.

The *A. Blainvillii* is not distinguishable by external markings, and the skulls bearing that name in the Museum collection all present a general robustness, such as age and sex might very probably occasion. One of them, which, from retaining some of the sutures, seems to be younger than the others, has the frontal bones less swollen, and the lower jaw with its angular process as much produced as in those labelled *marmoratus*, though deeper, but not so deep as in the others.

The *A. flaccidus* may be only a local variety, the skulls not being very clearly distinguishable, for there are not two between which some individual peculiarities may not be traced.

The skull to which the name *problematicus* is given is evidently young, having all its sutures well-marked, and in the absence of the fur cannot be safely looked upon as the type of a species. It agrees with the others in the character of the occiput, which distinguishes them all from the *A. gularis*, as well as from the *Bradypus crinitus*. The palæontologist is well aware of the uncertainty of establishing species upon trivial details of form, although slight distinctions are in some cases known to afford a true indication: the skulls of the Three-toed Sloths vary greatly, and all present a coarse, rough-hewn appearance which must detract from our confidence in little differences of detail. With regard to the lower jaw, they certainly do not present differences so strikingly characteristic as those upon which the species of *Mylodon* are established.

### Megatherium, Cuvier.

Intermaxillary bones lengthened and prominent; postorbital process lengthened and drawn out, but not inflated; malar bone with its frontal and zygomatic processes well-developed, the latter attached firmly to the zygoma; the supratemporal process rising obliquely; pterygoid bones compressed, and not inflated; crotaphite impression approaching near to the occipital ridge; tympanic bone attached, small, and not inflated; (immediately in front of the circular facet for the stylohyal bone there descends a strong process, which may probably belong to the tympanic bone and form a portion of a vaginal process;) lower jaw produced in front, deepened in the middle by the extensive implantation of the molars, the condyle much elevated; teeth $\frac{5-5}{4-4}$, quadrate, grooved transversely on the crown when worn, the cæmentum being thickened on the anterior and posterior surfaces; the posterior upper one small.

### M. Cuvieri.

Dr. Lund figures a tooth having the characters of this well-known genus, but of smaller size, under the name of *Megatherium Laurillardi*.

### Megalonyx, Jefferson.

General cranial characters unknown; teeth $\frac{?-?}{4-4}$, subelliptical, with a ridge on the inner side.

*M. Jeffersonii.*

### Mylodon, Owen.

Intermaxillary bones small (lost in the skeleton); postorbital process but little developed, thick; malar bone with the frontal process indicated by a slight angle, the zygomatic well-developed, touching the zygoma, the supratemporal process rising obliquely; pterygoid bones thin and compressed; crotaphite impression approaching near to the occipital ridge; tympanic bone reduced and separate; (the foregoing characters can of course apply only to the *Mylodon robustus*, it being the only species of which the cranium is known;) lower jaw broad and more or less prolonged in front, the lower outline straight, the condyle depressed; teeth $\frac{5-5}{4-4}$, the anterior ones rounded or trigonal, the posterior ones larger, trigonal in the upper jaw, gradually becoming bilobed in the lower. The species can only be characterized by the lower jaw, as it is the only part that is known in all of them. The characters are taken chiefly from Prof. Owen's works.

### M. Darwinii.

Lower jaw much produced anteriorly, with a double mammelliform tuberosity upon the symphysis below. The first tooth rounded or subtrigonal, the second subelliptical, with a slight depression on the inner side; the third subquadrate, grooved on the inner side; the posterior internal angle produced; the fourth bilobed, sharply grooved on the inner side.

### M. Harlani.

Lower jaw with the symphysis short; the second tooth subquadrate, grooved on the inner side, with the posterior internal angle produced; the third trapezoid, obliquely placed, with the inner side rounded; the fourth bilobed, the inner groove biangular, and a small shallow one anterior to it.

### M. robustus.

Lower jaw produced and very broad anteriorly, the first tooth round, the second subtrigonal, grooved internally, the third subquadrate, oblique, the fourth bilobed, with a deep scallop on the inner side and a smaller one anterior to it.

### Glossotherium, Owen.

Crotaphite impression approaching near to the occipital ridge; tympanic bone reduced and separate. The general cranial characters are unknown, but the fragment is recognizable by the great size of the surface for the stylohyal bone, and of the precondyloid foramen.

### Scelidotherium, Owen.

Malar bone with a well-developed zygomatic process; the character of its frontal process cannot be determined through mutilation of the specimen; crotaphite impression approaching near to the occipital ridge; tympanic bone reduced and separate; lower jaw greatly curved below, its condyle depressed; teeth $\frac{5-5}{4-4}$, transversely extended, the anterior ones fully as large as the others, the first in each jaw elongate trigonal, the others gradually becoming bilobed, the last upper one trigonal.

### *S. leptocephalum.*

PLATYONYX, Lund.

This genus is proposed by Dr. Lund, to include a series of species discovered by him, the first three of which he had previously referred to the genus *Megalonyx*, and Prof. Owen, in the conspectus at the end of his memoir on the *Mylodon*, has placed them in his genus *Scelidotherium*; but I prefer to adopt, for the present, Dr. Lund's latest arrangement, since in the lower jaws figured, the last lower molar has a deep groove on its posterior side, and the fourth species, of which an entire skull is figured (tab. 38), agrees in this character, and shows a marked distinction from the *S. leptocephalum* in the zygomatic arch being incomplete; the malar bone has no frontal process, and but a slight angular indication of the zygomatic process.

*P. Cuvieri.* *P. minutus.*
*P. Bucklandi.* *P. Brongniartii.*

In addition to these, Dr. Lund represents a metacarpal bone of a species which he calls *P. Owenii*, and an os scaphoides of the foot of another, which he names *P. Agassizii*.

The genera *Cœlodon* and *Sphenodon* of Dr. Lund seem open to the objection suggested by Prof. Owen, namely that the teeth would be first developed in the form of hollow obtuse cones, not assuming the cylindrical form until worn down to the part which has acquired in process of growth the normal thickness; but while I feel naturally cautious of introducing into my category any genera or species, the establishment of which is not made fully satisfactory to my mind, I must not be considered as rejecting any of those of Dr. Lund, when his illustrations and lists of names are the only evidences I can attain; since his original specimens are far beyond my reach, and my ignorance of the Danish language prevents my comprehending his descriptive memoirs.

## Fam. 2. DASYPODIDÆ.

The nasal bones long, of nearly uniform width, their extremities projecting forwards beyond the intermaxillaries; the intermaxillaries are portions of cylinders, reaching further especially on their palatal surface than in the other families; the maxillary bone swollen and provided with simple teeth; its zygomatic process projecting boldly outwards, and a ridge continued from it for the masseter, the molar series diverging behind; the posterior palatine foramina are replaced by a row of minute openings extending the whole length of the palate; the malar bone, when there is a descending masseteric process, or a rudiment of one, has it compressed longitudinally, extended transversely; the foramen rotundum is included in the foramen spheno-orbitarium; the zygoma is flat, gently twisted upwards towards its extremity; the mastoid bone with a deep narrow groove, containing one or more mastoid foramina; the basi-occipital bone with a transverse depression just anteriorly to the edge of the foramen magnum, and (excepting in the genera *Tolypeutes* and *Glyptodon*) with an articular surface upon the lower edge of that foramen receiving the odontoid process of the axis when the head is deflexed;

the occipital condyles are portions of cylinders, placed horizontally, each in a line with the paroccipital process; the precondyloid foramen is placed close to the condyle; the supra-occipital bone is broad above, forming on each side a strong thickened ridge; the lower jaw is narrowed and slenderly produced anteriorly.

The true affinities existing among the various Armadilloes have been rightly perceived by the Baron Cuvier, and are well pointed out in the 'Ossemens Fossiles'; but he did not designate the subgenera by any particular names, and naturalists, for the most part, have adopted the arrangement of Mons. F. Cuvier, which limits the genus *Dasypus* to the single species that has teeth in the intermaxillary bone, and unites all the rest, excepting the Giant Armadillo, under the generic name *Tatusia*. Mr. Gray, in the 'List of Specimens of Mammalia in the British Museum,' has adopted in addition the genus *Xenurus* of Wagler, and it will be further necessary to make use of Illiger's genus *Tolypeutes* for the Apara or Three-banded Armadillo. The species *villosus* and *minutus* must be associated, as Baron Cuvier has done with the *Encoubert* in the genus *Dasypus*.

The groups recognized in the 'Ossemens Fossiles' being thus restored and the names proposed by other authors applied to them, I shall proceed to characterize them by their external armour, by which they may very easily be distinguished, and to add the characters of the cranium, in which my observations have been assisted by the immortal work alluded to.

### TATUSIA.

Ears thrown backwards and approximated; plates of the head of irregular shape and smooth; those of the scapular and pelvic shields much smaller than those of the bands, and surrounded with others smaller still; fore-feet with four toes, the claws straight, the index and medius nearly equal, the pollex and annularis small; maxillary bone terminating in a pointed process behind; teeth rather small, none of them being further back than the root of the malar process; this process concave anteriorly, projecting outwards and backwards; the infra-orbital canal entirely below it; malar bone simply a portion of an inverted arch, hollowed on the outer side for nearly its whole length by the masseteric impression, merely abutting against the zygoma; palatine bone reduced in vertical extent, being encroached on above by a large thickened portion of the ethmoid bone which appears in the orbit, the sphenopalatine foramen being a narrow fissure between them; pterygoid bone simply bordering the termination of the palatine, without hamular process; zygoma compressed and elevated, its glenoid surface circular; tympanic bone reduced to a ring; mastoid narrowed; lower jaw slender, its condyle but little elevated, transverse and flat, coronoid process elevated.

### T. SEPTEMCINCTA.

Ears about one-third of the length of the head; plates smooth; tail as long as the body.

*T. affinis* of Dr. Lund may possibly be identical.

### T. HYBRIDA.

Ears about one-fourth of the length of the head; plates of the pelvic shield convex and elevated; tail about two-thirds of the length of the body. The characters of this species, which was named by M. Desmarest, are carefully pointed out by Mr. Martin in the 'Proceedings' of the Society, January 1837.

Cuvier speaks of a third species brought from Brazil by M. de Saint-Hilaire, under the name of *Tatou verdadeiro*, differing from the mule Armadillo in having the tail terminated by a horny sheath of one piece, the bands broader, and the plates of the pelvic shield larger.

Dr. Lund figures two ossicles of a *Tatusia*, indicating dimensions much greater than those usually attained by specimens belonging to the genus, and applies the name *Dasypus punctatus*. I find in the Museum of the College of Surgeons a recent carapace, denuded of its horny epidermal scutes, and wanting the scapular shield; it is as large as Dr. Lund's figures would imply, and has the same punctate depressions in the grooves which mark the surfaces of the component ossicles. It differs from a smaller one, still a large specimen, also denuded of the epidermal scutes, in the latter having the central area of each ossicle a little elevated at its posterior margin, and the punctate depressions fewer and smaller behind this area than in front of it; while in the larger specimen they are all about equal in size.

It is difficult to compare these specimens with those which retain their natural covering; but the punctate character seems to belong to the genus rather than to the species, it not being perceptible until the horny scutes are removed: and whether the *Tatusia punctata* be a species, or merely a large variety of one of the others, it would appear not to be extinct.

### CHLAMYPHORUS, Harlan.

Plates of the head, the scapular shield and the body forming an uninterrupted series, each a parallelogram, those of the neck smaller, and those of the muzzle irregular; pelvic shield small, flat, or slightly convex, placed vertically, at right angles to the dorsal armour, and composed of concentric semioval rows of trapezoid plates; fore-feet with five toes, the medius being the longest, the two inner claws the smallest, and the three outer ones very deep and compressed; frontal bone with a large thickened process above the eye; malar bone thin, deep anteriorly, with a rudiment of a descending masseteric process assuming a transverse position; auditory process bending forwards round the base of the zygoma; lower jaw with the ascending ramus much elevated, the condyle higher than the coronoid process.

*C. truncatus*.

### DASYPUS.

Head broad behind, ears wide apart, its plates irregular, marked like those of the body; those of the scapular and pelvic shields oblong parallelograms, like those of the bands, but becoming pentagonal or hexagonal towards the neck and croup—all the plates marked with an indented pattern; bands about six or seven; fore-feet with five toes, the index nearly as thick as the medius, which is the longest, the claws a little twisted outwards; maxillary bone terminating behind in a strong vertical column formed by the alveolus of the last tooth, and concealing the sphenopalatine and pterygopalatine foramina; teeth rather large; malar process compressed in the antero-posterior direction, suddenly projecting, concave anteriorly; infra-orbital canal short, pierced through the base of the process; malar bone angular, with a rudiment of a descending process, compressed in the antero-posterior direction; its zygomatic process deep, extending beneath the zygoma; palatine bone ascending into the orbit; no appearance of the ethmoid within the orbit; pterygoid bones with well-defined hamular processes, bent outwards; zygoma well-developed, flat; its glenoid surface slightly convex, reniform; tympanic bone well-ossified, forming a bulla; auditory process largely developed; mastoid bone very broad, placed entirely in the occipital region; lower jaw deep and thick, its ascending ramus high; coronoid process largely developed, condyle broad.

D. SEXCINCTUS.

Muzzle broad; plates large, distinct, but slightly indented; bands six or seven, *no* separate band on the anterior edge of the scapular shield; terminal plates of the bands and pelvic shield small; hairs few, white; teeth $\frac{9-9}{10-10}$, the first upper one on each side being in the intermaxillary bone.

D. VILLOSUS.

Muzzle broad; plates closely united, roughly tubercular, those of the bands closely united and small; bands eight; a separate band on the anterior edge of the scapular shield, behind the row of nuchal plates; terminal plates of the bands and pelvic shield large and falcate; hairs profuse, brown.

D. MINUTUS.

Muzzle tapering, narrow at the end; plates of the head smooth, those of the shield and bands closely united, and flatly tubercular; terminal plates of the bands and pelvic shield large and falcate; bands six or seven; a separate band on the anterior edge of the scapular shield, behind the row of nuchal plates; upper parts with black hairs; sides of the head and limbs with brownish hairs; under parts with whitish hairs; teeth $\frac{8-8}{9-9}$, none in the intermaxillary bones, nasal and intermaxillary bones lengthened.

XENURUS, Wagler.

Head broad behind, ears wide apart, its plates irregular, smooth; those of the scapular shield irregular in the middle, hexagonal towards the sides; bands twelve, composed of short and square plates; pelvic shield with square plates in the middle, becoming hexagonal towards the sides; tail almost naked; fore-feet with five toes, the index longest, but very slender, the three outer toes rapidly diminishing in length, but furnished with large claws, twisted outwards; maxillary bones articulated posteriorly by suture to the palatine, its malar process thick, rounded anteriorly; malar bone but slightly angular, its zygomatic process extending beneath the zygoma; palatine bone ascending into the orbit, and pushing up the sphenopalatine foramen into a fossa which contains the foramina of the orbit; pterygoid bones with their hamular processes styliform, projecting backwards; zygoma small, rounded above; tympanic incompletely ossified; mastoid bone broad, placed obliquely; lower jaw slender, its condyle elevated, reniform; coronoid process feebly developed, lower than the condyle.

X. UNICINCTUS.

Cuvier mentions a species with a shorter and more entirely naked tail; it is probably the same that has been called *nudicaudis* by Dr. Lund. *X. antiquus* of the same distinguished author may possibly be identical.

### PRIODONTES, Frederick Cuvier.

Head broad behind, ears wide apart; plates of the head and body as in *Xenurus*; tail closely covered with quadrangular scales, placed in a quincuncial arrangement; fore-feet as in *Xenurus*, the outer toe much reduced; maxillary bone articulated posteriorly by suture to the palatine; teeth numerous and minute; infra-orbital canal long, commencing below the malar process, and terminating nearly on the middle of the bone; malar bone forming simply a portion of an inverted arch, round, and devoid of processes; palatine bone ascending into the orbit; pterygoid bone strongly developed, with an angular termination; zygoma rather small, the glenoid surface lengthened, the lower part of the squamous and the alisphenoid bone forming a longitudinal swelling within it; tympanic bone small, and loose; mastoid bone broad, forming the sides of the occiput which are rounded; lower jaw thin and compressed, condyle longitudinal, but little elevated; coronoid process much reduced.

*P. gigas.*

### TOLYPEUTES, Illiger.

Head broad behind, ears wide apart; plates very closely articulated to each other, their surface divided by impressed marks, and studded with blunt tubercles, those of the scapular and pelvic shields varying from a square to a pentagonal or hexagonal form; bands three, composed of oblong parallelograms, equally subcircular, and closely articulated; fore-feet four-toed, the outer being absent; the medius slightly longer than the index, with a much larger claw, both having an outward twist; maxillary bone articulated posteriorly to the palatine, its malar process standing suddenly outwards, compressed; infra-orbital canal commencing below and behind its root, rather lengthened, rising a little in its course; teeth rather large; malar bone slender, and simply abutting by an oblique suture against the zygoma; palatine bone ascending into the orbit, pterygoids with blunt hamular processes, a little bent outwards; zygoma rather narrowed, glenoid surface flat, reniform; tympanic bone reduced to an annular form; lower jaw slender, condyle moderately elevated, reniform, coronoid process elevated.

T. TRICINCTUS.

Cuvier cites the *Cheloniscus* of Fabricius Columna as being this species, but represented with four bands instead of three; the last row of plates of the scapular shield is composed of oblong parallelograms like those of the bands, which may have given rise to such an error.

CHLAMYDOTHERIUM, Lund.

Judging by the plates that accompany Dr. Lund's Memoir, this appears to be a genus of extinct gigantic Armadilloes, having the body provided with moveable bands like the recent ones, and teeth of a compressed form, and irregularly fluted; two species are distinguished.

*C. Humboldtii.* *C. giganteum.*

HETERODON, Lund.

Distinguished by the unequal sizes of the teeth: the fragment of the lower jaw figured contains six teeth, of which two are much larger than the others.

*H. diversidens.*

EURYODON, Lund.

Dr. Lund figures a tooth resembling those of the Armadilloes, but apparently broader in proportion to its antero-posterior diameter.

*E. latidens.*

GLYPTODON, Owen.

Carapace ovoid, without distinction of shields or bands, composed of small hexagonal pieces with sculptured surfaces; teeth divided into narrow transverse lobes; malar bone with a lengthened descending process, placed transversely; zygoma flat, its glenoid surface elevated, transversely elongate, looking a little backwards; mastoid proportionally small, placed laterally.

G. CLAVIPES.

The central tubercle upon each ossicle large, round, or subhexagonal, conspicuous above the surrounding ones, which are small, and more cut up by reticulate depressions.

G. ORNATUS.

The central tubercle of each ossicle not conspicuously marked above the rest; all more finely granular.

This may possibly be the young of that to which the name *reticulatus* has been applied, and which, therefore, I will at present omit.

G. TUBERCULATUS.

Ossicles approaching to a square or rhomboidal form, their surface divided into numerous irregular elevations.

The genus *Hoplophorus* of Dr. Lund appears to be identical with *Glyptodon*; he figures two teeth in which the characters of that genus are clearly shown, and several detached ossicles and portions of carapace bearing a general resemblance to the species of *Glyptodon*, principally to the *G. ornatus*. He distinguishes two species, the *H. Euphractus* and *H. Selloi*. Prof. Owen refers to the *H. Euphractus* a portion of carapace brought home by Mr. Darwin, and figured in the 'Voyage of the Beagle,' which very closely resembles those afterwards figured in the 'Catalogue of Fossil Mammalia and Aves in the Museum of the Royal College of Surgeons' under the name *G. ornatus*.

I am not as yet acquainted with the *Pachytherium magnum* of Dr. Lund's catalogues.

## Fam. 3. MYRMECOPHAGIDÆ.

The nasal bones simple, of uniform width, emarginated at the ends; the intermaxillary bones much reduced; the maxillary bones much lengthened, toothless, the malar process projecting backwards, outwards and downwards; the posterior palatine foramen single, or wanting; the malar bone reduced to a slender stylet free at the posterior end; the foramen rotundum included in the foramen spheno-orbitarium; the zygoma very small, and pushed quite to the anterior superior angle of the squamous portion; the supra-occipital bone encroaches upon the upper surface of the skull, and has a median protuberance; the lower jaw much lengthened and slender at the end, without coronoid process.

Not having seen the skull of the little Two-toed Ant-eater, I have used a little caution in characterizing this family. For example, I have avoided alluding to the peculiar character of the pterygoids, as Cuvier informs us that they do not enclose a long canal as in the larger species. I therefore limit the diagnoses of the genera to the few points, in which, in the absence of a skull of the small species, they are known to differ*.

MYRMECOPHAGA, Linnæus.

Fore-feet with four toes; hind-feet with five toes; palatine and pterygoid bones united beneath the nasal canal for their whole length.

M. JUBATA, Linn.

Varied with black and grey, the latter predominating on the head, back, sides, fore-limbs and tail; throat, a mark running obliquely from the shoulder upwards and backwards, and hind-limbs black; fur very coarse; tail but little longer than the body, very bushy.

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* I have since seen the cranial portion of the skull of the Little Ant-eater, and find that although the pterygoid bones do not enclose the nasal canal below, they resemble those of the larger species in their great extent backwards.

### M. TAMANDUA.

Head, shoulders, fore-limbs, outside of the hind-limbs, and middle third of the tail white; a stripe from each side of the neck over the shoulder and remaining parts black; tail but little longer than the body, its terminal third scaly. Varies chiefly by the diminution of the intensity of the black.

I have found that the Yellow Ant-eater, hitherto considered to be one of the varieties of this species, differs remarkably in the length and size of the tail; the ears also appear to be larger, but this latter character is less decisive, owing to the different degrees to which they may shrink when dry. A specimen in the British Museum, and one in that of this Society, resemble each other exactly, while a young pale specimen of *M. Tamandua* has a tail proportionally of the same length as the larger and darker individuals. Under these circumstances I have been induced to propose a name for the Yellow Ant-eater, deeming it probable that the species may be distinct.

### M. LONGICAUDATA.

General colour uniform light ochraceous, a paler line runs down the middle of the back; tail nearly double the length of the body, its terminal half covered with small scales and a few scattered black hairs; ears large, round, about one-third the length of the head.

Although the flanks show a slightly darker reflection in certain directions of the light, there is no trace of the mark which runs across the shoulder.

On referring to the figure, in Krusenstern's Voyage (tab. 6 *e*), on which M. Desmarest founded his *Myrmecophaga annulata*, I find it to be a very excellent representation of a Coati-mondi, probably the brown species. The head is bent downwards, the tongue protruded, and curved beneath the left fore-foot; from under the further side of the foot there comes a small twig of a tree, which, if it were not branched, would look like a continuation of the tongue. But the figure published in Griffith's translation of the 'Règne Animal' is not so easy to interpret. The general form of the body is more like that of an Ant-eater, though rather too long and slender; the tapering head and the dark stripe from the end of the muzzle to the eye remind one of the *Myrmecobius*, which was not known until several years afterwards; the tail is just such as a Coati-mondi might have supplied. The figure is said to have been drawn from a stuffed specimen, but the authors do not state where the specimen existed, and possibly may never have seen it.

Cuvier asserts, with much probability, that the animal from which Buffon took his figure of the *Tamandua* was made up of the skin of a Coati-mondi, to which striped markings had been artificially applied.

### CYCLOTHURUS, Gray.

Fore-feet with two toes, the outer one much the larger; "the palatines only meet below for two-thirds of their length, and the bony canal of the nares there terminates, the pterygoids not meeting, but presenting only two long parallel and little prominent crests."

C. DIDACTYLUS.

Dr. Lund inserts in his lists of fossil species one which he has named *Myrmecophaga gigantea*, but I have seen no representation of any portion of the animal among the figures published.

### Fam. 4. MANIDÆ.

The intermaxillary bones small, having ascending processes running upwards and backwards; each encloses a separate incisive foramen; the maxillary bones short, toothless, their malar processes projecting backwards, outwards and downwards; the palatine bones much spread out in front, and with distinct posterior palatine foramina; the malar and lacrymal bones wanting, but a large lacrymal opening; the alisphenoid bone much reduced; the zygoma deep, thin, concave exteriorly, and pushed downwards to the anterior and inferior angle of the squamous portion; the occipital condyles prominent, oblique, the precondyloid foramina at some distance anterior to them.

This family consists of but one genus, containing several well-marked species.

MANIS, Linnæus.

In characterizing the species of this genus, I give the number of scales in each transverse row, instead of the number of longitudinal rows, which has been the usual method adopted. The number in each case will appear much less, but it will be recollected that this is owing to the scales of one row being alternate with those of the next one.

M. PENTADACTYLA, Linn. (*macroura*, Desm.)

Each transverse row of scales composed of three on each side of the median one; scales striated at the base, smooth at the end, the striated part distinctly separated from the smooth portion; ends of the scales simple; under parts naked; tail very broad at the base, about equal to the body in length; fore-feet five-toed, the claw of the medius much the largest, that of the annularis next, that of the index much less, the other two very small; hind-feet with lengthened claws; limbs scaled to the bases of the claws.

M. JAVANICA, Desm.

Four scales on each side of the median one in each transverse row, the lower ones on each side, and the lateral ones beneath the tail, keeled and pointed at the ends; tail broad at the base, equalling the head and body in length; under parts with short white hairs; limbs scaled to the bases of the claws; fore-feet with the middle claw largest, the index a little less than the annularis, the others very small; hind-feet with lengthened claws.

M. TEMMINCKII, Smutz.

Body altogether very broad; scales broad, three on each side in every transverse row, striated to the tips which are rounded, none of them carinate; under parts naked; tail about the length of the body, broad and rounded at the end; limbs scaled to the bases of the claws;

fore-feet with the middle claw largest, the two next less, the remaining two much less; those of the hind-feet vertical, truncated.

M. TETRADACTYLA, Linn. (*Africana*, Desm.)

Scales large, three on each side in every transverse row, striated to the tip, which is square, with a point projecting from the middle, the lower ones at the sides and the lateral ones beneath the tail carinate; tail double the length of the body, a little narrowed at the base, soon becoming broad; limbs only scaled at the base, then covered with black hairs like the under parts; fore-feet with the middle claw very long and compressed, the index and annularis much less and nearly equal, the minimus less still, the inner toe very small; hind-feet with lengthened claws, nearly equal.

M. MULTISCUTATA, Gray, Proc. Z. S. Feb. 1843.

Five scales on each side of the median one in every transverse row; scales striated to the tip, which is square, with a median point; those on the sides of the trunk and limbs, and the lateral ones beneath the tail, carinate; tail nearly double the length of the body, of moderate width; under parts with short whitish brown hairs; fore-limbs scaled to the carpus; toes all well-developed, except the thumb, which is small, the medius longest; hind-feet scaled nearly to the base of the claws, which are all lengthened and well-developed, except the thumb, which is small; the annularis nearly as long as the medius.

*M. aurita*, Hodgson.

### Fam. 5. ORYCTEROPODIDÆ.

The nasal bones long and much spread out behind, narrowed and not projecting anteriorly; the intermaxillaries well-developed, prominent below, not enclosing foramina; the maxillary bones lengthened and deep, provided with compound teeth; the palate terminating soon with a strong transverse ridge, having a pair of large posterior palatine foramina; the lacrymal bone large, extending much upon the face; the malar bone large, extending much upon the face, but its zygomatic process small and slender; the frontal bone large and swollen, with a small and contracted post-orbital process; the parietals extended downwards at their anterior inferior angles to articulate with the alisphenoids; the zygoma slender, twisted as in the Armadilloes; a strong post-articular and a post-auditory process, and just within the latter a short truncate styloid process, not enclosed by any vaginal process, as the tympanic bone is much reduced and separate; the occipital condyles hemicylindrical, but with a portion of articular surface continued from them upon the lower edge of the foramen magnum; the paroccipital processes in a line with them, but distinctly separated.

As this family consists, so far as is yet satisfactorily known, of a single species, its characters might be multiplied to almost any extent; should another form be discovered, they will of course need revision.

This communication having extended far beyond the length that I at first contemplated, notwithstanding that I have limited myself in most cases to the distinctive peculiarities of the skull, it will readily be seen that, had I entered upon the whole osteology of the order, or even introduced in every instance the characters by which the genus or species may be known externally, I should have swelled this little monograph to such a degree as almost to preclude its insertion in the 'Proceedings' of the Society, and entailed upon myself an amount of labour from which I would by no means shrink, but fear I shall be compelled to defer until more favourable opportunities present themselves; but I trust that the little I have as yet accomplished may afford the naturalist a clearer insight into the relations of the living Edentata among themselves, and with those that formerly peopled the portion of the world which was then, as now, the principal abode of this remarkable group.

Pimlico, July 1851.

## 4. A MONOGRAPH OF SCUTUS, A GENUS OF GASTEROPODOUS MOLLUSCA, BELONGING TO THE FAMILY FISSURELLIDÆ.

### BY ARTHUR ADAMS, R.N., F.L.S. ETC.

### Genus SCUTUS, De Montfort.

Animal with the head proboscidiform; tentacles thick and subulate, with the eyes on tubercles at their outer bases; mantle reflexed over the sides of, and nearly covering, the shell; sides of foot with a series of short cirrhi.

Shell oblong, scutiform, flattened; apex dorsal, oblique, posteriorly inclined; margin of aperture sinuated in front; muscular impression horse-shoe shaped, open anteriorly.

*Parmophorus*, Blainv.—*Dascinus*, Rafin.—*Scutellites*, Auct.—*Scutum*, Sow. jun.—*Parmophore*, Desh.—*Emarginula*, sp. Sow.—*Patella*, sp. Lamk.

1. SCUTUS UNGUIS, Linn.

*Patella unguis*, Linn. Mus. Ludovic. Ulric. Regin. p. 69. no. 419. —*Patella ambigua*, Chemn.—*Scutus antipodis*, Montf.—*Parmophorus australis*, Lamk.—*Parm. elongatus*, Blainv.

*Hab.* New Zealand. Mus. Cuming.

2. SCUTUS ELONGATUS, Lamarck.

*Patella elongata*, Lamk. Ann. du Mus. i. p. 310.—*Parmophorus elongatus*, Lamk. Hist.—*Emarginula elongata*, Sow. Gen.

*Hab.* East Australia. Mus. Cuming. Also occurs fossil.

3. SCUTUS GRANULATUS, Blainv.

*Parmophorus granulatus*, Blainv. Bullet. des Scienc. 1817; Lamk. Hist. An. s. Vert. vol. vii. pt. ii. p. 5; Reeve, Conch. Syst. pl. 139. f. 4.

*Hab.* Port Essington, on the rocks, low water. Mus. Cuming.

4. **Scutus corrugatus**, Reeve.

*Parmophorus corrugatus*, Reeve, Proc. Zool. Soc. 1842; Conch. Syst. pl. 139. f. 1.

*Hab.* —— ? Mus. Cuming.

5. **Scutus tumidus**, Quoy et Gaimard.

*Parmophorus tumidus*, Quoy et Gaim. Voy. de l'Astrol. pl. 69. f. 6. —*Parm. gibbosus*, Anton.—? *Parm. breviculus*, Blainv. Bull. des Sci. 1817; Sowerby's Gen. (Emarg.) fig. 2.

*Hab.* Madagascar. Mus. Cuming.

6. **Scutus imbricatus**, Quoy et Gaimard.

*Parmophorus imbricatus*, Quoy et Gaim. Voy. de l'Astrol. pl. 69. f. 17, 18.

*Hab.* Island of Burias. Mus. Cuming.

7. **Scutus angustatus**, A. Adams. *S. testâ elongatâ, subquadrangulari, lateribus angustatis, coarctatis; dorso plano, concentrice striato, vertice subcentrali, postice declinato; extremitate anticâ sinuatâ, posticâ excurvatâ, subelevatâ.*

*Hab.* Eastern Seas. Mus. Cuming.

## 5. A MONOGRAPH OF THE GENUS MONOPTYGMA OF LEA.

## BY ARTHUR ADAMS, R.N., F.L.S. ETC.

### Genus MONOPTYGMA, J. Lea. (? *Menestho*, Müll.)

Animal unknown.

Shell subulately turreted, transversely striated, apex simple, acute; aperture oval, longer than wide, rounded and entire in front; columella with a single oblique fold.

This genus differs from *Actæon* in being elongated, and in having an oblique fold, instead of a transverse plait on the columella.

1. **Monoptygma striata**, Gray. *M. testâ turrito-subulatâ, solidâ, olivaceâ, anfractibus planis, transversim sulcatis, sulcis profundis, distantibus; aperturâ oblongâ, intus albâ.*

This species, which is typical, is a very thick and strong shell, with a somewhat convex lateral outline, and strongly transversely grooved across the flattened whorls. Mus. Cuming.

2. **Monoptygma fulva**, A. Adams. *M. testâ turrito-subulatâ, graciliori, solidâ, fulvâ, anfractibus planis, transversim sulcatis, sulcis profundis, distantibus; aperturâ oblongâ, intus fuscâ.*

This elegantly-formed shell is more slender than *M. striata*, and of a different colour; the transverse grooves are also much closer together, and their edges are rounded; the twist of the columella is not so distinct, and the aperture is brown internally. Mus. Cuming.

3. **Monoptygma granulata**, A. Adams. *M. testâ ovato-turritâ, albâ, solidâ, anfractibus planiusculis, gradatis, longitudi-*

*naliter corrugato-plicatis, transversim sulcatis, sulcis profundis, valde distantibus; interstitiis lævibus; aperturâ oblongâ, columellâ plicâ subproductâ.*

This is a rather short and obtuse white and solid species, very strongly grooved transversely, and with the whorls longitudinally corrugately plicated. Mus. Cuming.

4. MONOPTYGMA LAUTA, A. Adams. *M. testâ turrito-subulatâ, albidâ, tenui, subpellucidâ, anfractibus planiusculis, longitudinaliter eleganter striatis, transversim sulcatis, sulcis distantibus, interstitiis crenulatis; aperturâ oblongâ, columellâ obliquâ et curvatâ.*

A very beautifully-sculptured species, dredged from 10 fathoms, at Bolinao, by Mr. Cuming; the outline is subulated, and the whorls rather flattened and longitudinally striated. Mus. Cuming.

5. MONOPTYGMA AMŒNA, A. Adams. *M. testâ ovato-acuminatâ, tenui, subpellucidâ, albidâ, longitudinaliter substriatâ, anfractibus convexiusculis, transversim sulcatis, sulcis valdè distantibus, interstitiis eleganter punctatis; aperturâ oblongâ, antice dilatatâ, columellâ rectâ.*

This is a most exquisite species, both in form and sculpture; the whorls are rounded and punctate-striate, and the shell is nearly pellucid; it is from Bolinao, 10 fathoms water. Mus. Cuming.

6. MONOPTYGMA CASTA, A. Adams. *M. testâ ovato-turritâ, albâ, tenui, semipellucidâ, anfractibus convexiusculis, transversim sulcatis, sulcis subconfertis, interstitiis pulcherrimè striatis; aperturâ oblongâ, antice productâ, columellâ obliquâ, subtortuosâ.*

This pure white ovate form is from the China Seas, being collected by the writer during the Voyage of H.M.S. Samarang. The whorls are grooved, with the interstices striated. Mus. Cuming.

7. MONOPTYGMA SPECIOSA, A. Adams. *M. testâ turritâ, subulatâ, albidâ, tenui, semipellucidâ, anfractibus octo, convexiusculis, suturâ profundâ, cingillis transversis elevatis, interstitiis concinnè cancellatis, ornatâ; aperturâ oblongo-ovali, columellâ subrectâ, supernè plicâ obliquâ subobsoletâ instructâ.*

*Hab.* Baclayon; Philippines. Mus. Cuming.

An elegant semipellucid species, resembling an elongated *Actæon*, with the whorls encircled with elevated cingilli, and the interstices cancellated.

8. MONOPTYGMA SPIRATA, A. Adams. *M. testâ turritâ, albâ, epidermide fusco tectâ, anfractibus octo, planiusculis, gradatis, suturâ canaliculatâ, plicis longitudinalibus, angustis, confertis, et sulcis transversis decussatim ornatâ; aperturâ oblongâ, labio plicâ unicâ obliquâ instructo.*

*Hab.* Camaguin; Philippines. Mus. Cuming.

A small turreted species, covered, in the living state, with a light brown epidermis, and with the surface regularly and beautifully decussated with raised lines.

9. Monoptygma tenella, A. Adams. *M. testâ ovato-turritâ, albâ, subpellucidâ; anfractibus quatuor, convexiusculis, transversim tenuiter striatâ; aperturâ ovali, labio subreflexo, plicâ obsoletâ instructo; labro dilatato, margine flexuoso incrassato et subreflexo.*

*Hab.* Philippine Islands. Mus. Cuming.

A small *Rissoa*-like shell, with only a faint indication of a plait on the columellar lip; the aperture dilated, and the outer lip expanded and slightly thickened anteriorly.

10. Monoptygma stylina, A. Adams. *M. testâ subulatâ, in medio incrassato, albâ, subpellucidâ, anfractibus* 9–12, *planiusculis, transversim tenuiter sulcatâ, longitudinaliter substriatâ; aperturâ oblongâ, labio superne plicâ obliquâ instructo; labro, in medio, subrecto.*

*Hab.* Catanuan; Philippines. Mus. Cuming.

A remarkable white subulate shell, with the middle whorls, especially those near the apex, enlarged.

11. Monoptygma suturalis, A. Adams. *M. testâ subulato-turritâ, subumbilicatâ, albâ, nitidâ, subdiaphanâ, anfractibus septem planis, suturâ canaliculatâ, transversim sulcatâ, anfractu ultimo subsoluto, fasciis angustis, albo articulatis, ornato; aperturâ oblongo-ovali, labio plicâ evanidâ instructo.*

*Hab.* Philippine Islands. Mus. Cuming.

A small white species, with the last whorl nearly free, and having the suture deeply channeled.

## 6. Descriptions of new Shells, from the Cumingian Collection; with a Note on the genus Nematura.

By Arthur Adams, R.N., F.L.S. etc.

Pyramidella metula, A. Adams. *P. testâ subulatâ, turritâ, apice obtusiusculo, albidâ anfractibus decem planulatis, longitudinaliter costatâ, costis confertis æquantibus, interstitiis lineis transversis elevatis ornatâ; aperturâ ovali, labio incrassato, in medio plicâ unicâ instructo; labro margine subincrassato.*

*Hab.* Mizamis, Cagayan. Mus. Cuming.

A small elongated species, somewhat resesembling a *Rissoina*, with the intervals between the ribs finely cancellated, and the whorls very numerous.

Pyramidella aclis, A. Adams. *P. testâ subulatâ albâ nitidâ, anfractibus octo planiusculis longitudinaliter plicatâ, plicis æqualibus subconfertis, interstitiis lævibus; aperturâ semiovatâ, labio subincrassato plicâ unicâ munito; labro subdilatato.*

*Hab.* Philippines. Mus. Cuming.

This is a slender subulate species, likewise resembling in appearance a *Rissoina*.

LACUNA CARINIFERA, A. Adams. *L. testâ ovatâ, spirâ acuminatâ, anfractibus quatuor, latè umbilicatâ, fulvâ, anfractu ultimo angulato, carinâ transversâ elevatâ, rufo-fusco articulatâ, ornato; aperturâ semiovatâ; labro acuto, angulato, labio recto, fissurâ umbilicali elongatâ.*

*Hab.* Borneo. Mus. Cuming.

The single prominent keel round the periphery of the last whorl is the principal feature of this species.

VELUTINA SITKENSIS, A. Adams. *V. testâ nigro-fuscâ, epidermide liris elevatis transversis confertis obtectâ, longitudinaliter valdè sulcatâ, sulcis subdistantibus; aperturâ ovali, intus sulcatâ; labro margine reflexo, nigro, incrassatò; postice non-producto supra anfractum ultimum.*

*Hab.* Sitka. Mus. Cuming.

The dark brown colour and oval form distinguish this species from *V. lævigata*, which also has the outer lip arched and expanded posteriorly.

OTINA FUSCA, A. Adams. *O. testâ magnâ, solidâ, semiopacâ, fuscâ, sine epidermide, dorso convexâ, longitudinaliter subplicatâ, transversim tenuiter striatâ, labio lato, plano, et excavato; labro recto, non reflexo aut expanso.*

*Hab.* Benguela. Mus. Cuming.

The large size of this species, and its convex form, distinguish it from *O. otis*, and its absence of bands, and the outer lip not being expanded, from *O. zonata*, Gould, the only two species at present known to me.

## 7. NOTE ON NEMATURA, BY A. ADAMS.

The genus *Nematura*, established by Mr. Benson, appears to have the closest affinity with *Bithynia* of Leach, but the horny operculum, with grooved margins, and the contraction of the aperture, will distinguish them. There appear to have been found at present but six species, three of them known, and three here indicated for the first time; in the rivers and streams of the East are doubtless many more; they are usually found adhering to the under surface of dead floating leaves.

1. NEMATURA DELTÆ, Benson. *N. testâ magnâ, pallidè fulvâ, globosâ, lævi; aperturâ orbiculari, peritremate simplici.*
Mus. Cuming.

2. NEMATURA MINIMA, Benson. *N. testâ parvâ, corneâ, semipellucidâ, ovali, spirâ subproductâ; politâ, fasciis rufis subobsoletis ornatâ; aperturâ orbiculari, peritremate simplici.*
Mus. Cuming.

3. **Nematura polita**, Sowerby. *N. testâ magnâ, castaneo-fuscâ, compressâ, subvaricosâ; aperturâ ovali, peritremate anticè striato; regione umbilicali lirâ callosâ circumdato; punctato-striatâ.*
Mus. Cuming.

4. **Nematura olivacea**, A. Adams. *N. testâ ovatâ, opacâ, olivaceâ, viridi-fusco reticulatâ; aperturâ ovali, spirâ elevatâ, apice decollato, peritremate simplici.*
Mus. Cuming.

5. **Nematura glabrata**, A. Adams. *N. testâ magnâ, ovatâ, non compressâ aut varicosâ, subviridi-corneâ; spirâ acutâ, apice acuminato, lævi, politâ; aperturâ orbiculari, angustatâ, peritremate nigro.*
*Hab.* Penang. Mus. Cuming.

6. **Nematura puncticulata**, A. Adams. *N. testâ mediocri, pallidè fulvâ, compressâ, anfractu ultimo gibboso, et subangulato ad latera, lineolis punctatis transversis ornatâ, peritremate simplici.*
*Hab.* Eastern Islands. Mus. Cuming.

## 8. A Monograph of the recent species of Rimula, a genus of Mollusca, belonging to the family Fissurellidæ.

By Arthur Adams, R.N., F.L.S. etc.

The genus *Rimula* of Defrance has been usually confounded with *Puncturella* of Lowe, or the *Cemoria* of Leach, but it is at once distinguished by the absence of the arcuated plate in the interior of the vertex. The species already known are fossil, to which we now add a few recent examples.

### Genus Rimula, Defrance.

Shell conical, with an elevated, recurved, entire vertex, turned towards the posterior end; surface cancellated, with radiating ribs; a linear perforation in the upper part of the shell, half-way between the vertex and anterior margin; margin of aperture crenulated; interior simple, with no shelly plate; muscular impression crescentic, interrupted in front.

1. **Rimula exquisita**, A. Adams. *R. testâ magnâ, ovali, semipellucidâ, albâ, costis longitudinalibus, radiantibus, lineisque elevatis, transversis, concentricis, cancellatâ; cancelli subquadrati; costis crenulatis, inæqualibus, prominentibus, anterioribus duabus divergentibus, interstitiis costellis duabus instructis; supra perforationem concavâ; perforatione elongatâ subquadratâ.*

*Hab.* Catanuan, island of Luzon and island of Burias, found on dead shells, 7 and 10 fathoms, sandy mud (*H. C.*). Mus. Cuming.

2. Rimula Cumingii, A. Adams. *R. testâ parvâ, ovatâ, opacâ, costellis longitudinalibus, radiantibus, lineisque transversis, crassis, concentricis, cancellatâ; cancelli transversi, elongati; costis nodulosis, subæqualibus, prominentibus, distantibus, anterioribus duabus antice divergentibus, interstitiis costellis duabus instructis, perforatione elongatâ, subquadratâ.*
*Hab.* Eastern Seas. Mus. Cuming.

3. Rimula carinata, A. Adams. *R. testâ parvâ, ovali, costellis simplicibus, permultis, confertis, longitudinalibus, radiantibus, ornatâ; interstitiis cancellatis; cancelli punctiformes; costellis duabus anterioribus, antice convergentibus, et apud aperturæ marginem junctis; interstitiis, supra perforationem, convexis, supra verticem extendentibus, quasi carinâ; perforatione ovali, angustâ, antice angustatâ.*
*Hab.* Cagayan, province of Misamis, island of Mindanao, on dead shells, 25 fathoms, sandy mud (*H. C.*). Mus. Cuming.

4. Rimula propinqua, A. Adams. *R. testâ parvâ, elongato-ovali; costellis prominentibus, asperis, longitudinalibus, radiantibus, subdistantibus; interstitiis valde cancellatis; cancelli transversi, subquadrati; costellis duabus anterioribus, antice convergentibus, ad aperturæ marginem junctis; perforatione angustato-ovali, antice acuminatâ.*
*Hab.* Catapan, Philippines. Mus. Cuming.

## 9. A Monograph of Puncturella, a genus of Gasteropodous Mollusca, belonging to the family Fissurellidæ.

### By Arthur Adams, R.N., F.L.S. etc.

### Genus Puncturella, Lowe.

Head proboscidiform, tentacles subulate, with the eyes on swellings at their outer base; sides with a range of cirrhi, interrupted behind on each side; mantle-margin simple; branchial plumes two; anal siphon prominent, forming a truncated membranous canal projecting from the subapical perforation.

Shell conical, with an elevated, slightly recurved, obliquely spiral entire vertex, turned towards the posterior end; aperture expanded, oval; surface with radiating ribs; margin entire; a linear perforation in the upper part of the shell, between the vertex and front margin, in the line of an elevated rib. Interior with a linear groove, vaulted over with a shelly plate corresponding to the perforation; muscular impression crescentic, interrupted in front.

*Cemoria*, Leach, MSS.—*Sipho*, Brown.—*Rimula*, Lovèn; Gould; Couthouy.—? *Diadora*, Gray.

1. Puncturella Noachina, Linnæus.

*Patella noachina*, Linn. Mantissa, p. 551; Chemn. Conch. Cab. vol. xi. p. 186. pl. 197. f. 1927, 1928.—*Patella fissurella*, Müller.—

*Fissurella Noachina*, Schum.—*Puncturella Noachina*, Lowe.—*Cemoria Flemingii*, Leach, MSS.—*Cemoria Noachina*, Lowe.—*Rimula Flemingii*, Macgill.—*Rimula Noachina*, Couthouy.—*Sipho Noachina*, Brown.

*Hab.* British Islands. Mus. Cuming.

2. PUNCTURELLA CUCULLATA, Gould.

*Rimula cucullata*, Gould, Expedition, Shells, p. 14.
*Hab.* Puget Sound.

3. PUNCTURELLA GALEATA, Gould.

*Rimula galeata*, Gould, Expedition, Shells, p. 14.
*Hab.* Puget Sound. Mus. Cuming.

4. PUNCTURELLA COGNATA, Gould.

*Rimula cognata*, Gould, Expedition, Shells, p. 14.
*Hab.* Orange Harbour.

5. PUNCTURELLA CONICA, D'Orb. Voy. Am. Mer.

6. PUNCTURELLA FASTIGIATA, A. Adams. *P. testâ albidâ elevato-conicâ, nitidâ, vertice acuminato involuto, costellis longitudinalibus æqualibus æquidistantibus, interstitiis planis lineis incrementi concentricis; fissurâ lanceolatâ; aperturâ ovali, margine crenulato, fornice costâ, costâ valde arcuatâ, transversali, simplici.*

*Hab.* Eastern Seas. Mus. Cuming.

7. PUNCTURELLA PRINCEPS, Mighels and Adams.

*Cemoria princeps*, Mighels and Adams, Bost. Journ. Nat. Hist. vol. iv. p. 43.

## 10. ON SOME GENERA OF SHELLS, ESTABLISHED IN 1807 BY THE LATE H. F. LINK. BY DR. HERRMANNSEN, OF KIEL.

In several programs, hitherto not at all taken notice of by any Conchologist, the renowned Botanist Link of Berlin, then Professor of Natural History, Chemistry and Botany at Rostock, in the course of the years 1806 to 1808, has published an account of the Collections of the Rostock University. These little treatises seem to be very rare, nor do I remember ever to have found them mentioned, before my 'Index Generum Malacozoorum' recorded them. Yet they may claim priority in many instances, which I hope will be redeemed by simply noticing their contents. The German titles of these octavo pamphlets are as follows:—

Beschreibung der Naturalien-Sammlung der Universität zu Rostock, von Dr. H. F. Link. Rostock. Gedruckt bei Adlers Erben.

Erste Abtheilung; zum Weihnachtsfest, d. 25 Dec. 1806 (p. 1–48).
Zweite Abth.; zum Osterfest, d. 29 Marz 1807 (p. 49–98).
Dritte Abth.; zum Pfingstfest, d. 17 Mai 1807 (p. 99–165).
Vierte Abth.; zum Weihnachtsfest, d. 25 Dec. 1807 (p. 1–30).
Fünfte Abth.; zum Osterfest, d. 7 April 1808 (p. 1–38).
Sechste Abth.; zum Pfingstfest, d. 5 Juni 1808 (p. 1–38).

Passing over those genera which are either superfluous because formerly rightly published under other names, or unhappily contrived, I will hint at those that may deserve to be attended to.

### MOLLUSCA. GASTEROPODA. SIPHONOBRANCHEA.

LAMBIDIUM, Link, 1807, *l. c.* iii. p. 112.

Spire little prominent; aperture longitudinal, narrow; inner lip callous, with raised points; outer lip marginated; base truncated; shell destitute of varices or spines.

*Lambidium oniscus* (*Strombus*), Linn.

This genus having been indicated in 1798, by Dr. Bolten, as *Morum*, but without definition, the botanical signification of that name may have induced Link to select another, which, being correctly founded, must be preferred to *Oniscia* of Mr. Sowerby; or at least, if we should dissect the genus with Dr. Gray, into *Oniscia*, *Sconsia*, and *Morum*, to the last.

PHALIUM, Link, 1807, *l. c.* iii. p. 112.

Spire shorter than the last whorl; aperture longitudinal, wide; inner lip callous and smooth, or extended into a folded or granulated lamina; outer lip marginated; shell often varicose; base strongly recurved, notched; inner columella not folded.

A. Lamina of the inner lip folded: *Phalium glaucum* (*Buccinum*), Linn. &c.—B. Lamina of the inner lip granulated: *Phalium erinaceum* (*Bucc.*), Linn. &c.

This is *Bezoardica*, Schum., or *Cassidea*, Swains.

CASSIDEA, Link, 1807, *l. c.* iii. p. 111.

Spire little prominent; aperture longitudinal, narrow; outer lip marginated, like the inner one, with many folds; shell spineless, often varicose; base strongly reflected, notched; inner columella folded.

*Cassidea rufa, tuberosa, cornuta, testiculus, flammea, pennata.*

This has been proposed by Mr. Stutchbury as *Cypræcassis*, but must at all events retain the name of *Cassis*, Browne, 1756.

GALEODEA, Link, 1807, *l. c.* iii. p. 113.

Spire much shorter than the last tumid whorl; inner lip extended in shape of a smooth lamina; outer one slightly marginated; base rather elongated, reflected, not emarginate.

*Galeodea echinophora* (*Bucc.*), Linn.

Synonyms are *Morio*, Montf., and *Cassidaria*, Lamck., both of a more recent date.

THAIS, Link, 1807, *l. c.* iii. p. 114.

[*Thais* of Bolten Mus. includes some *Ricinulæ* and *Monoceros* of Lamarck, from which Link has depurated it.]

Spire shorter than the last, ventricose whorl; aperture semicircular; inner lip plane, obliquely cut off, callous, smooth; outer lip scarcely marginated; shell without varices; base short.

*Thais Persica* (*Bucc.*), Linn.—*patula*, Linn. sp.—*hæmastoma* (Chemn. fig. 964, 965).—*fucus*, Gmel. sp.—*minuta*, Link.

This genus, which is synonymous with *Microtoma*, Swainson, I should think advisable to be retained at least as a section of the hitherto confused genus *Purpura*.

MANCINELLA, Link, 1807, *l. c.* iii. p. 115.

Spire much shorter than the last whorl; aperture longitudinal, rounded; inner lip smooth and callous, outer one little or not at all marginated; shell without varices, but provided with spines and imbricate scales; base short, or scarcely elongated, twisted outwards, slightly notched.

*Mancinella aculeata* (Chemn. 967, 968).—*hystrix*, Linn. sp.—*castanea*, Link (Chemn. 956–958).—*armigera*, Chemn. sp.—*mutabilis*, Chemn. 951–953.—*Bezoar*, Chemn. 754, 755.

This genus, combining some *Purpuræ* with some *Pyrulæ* of Lamarck, comes near to *Rapana a*, Schum., and perhaps may be adopted.

VOLEMA, Link, 1807, *l. c.* iii. p. 115. (*Volema*, Bolt. emend.)

Spire much shorter than the last whorl, often distorted; aperture oblong, rounded; inner lip smooth and callous, outer lip simple; shell without varices; if grown old, with spines or imbricated scales; base elongated, rather turned aside.

The species are to be found in my 'Ind. Gen. Malacoz.' vol. ii. p. 699.

This genus unites *Busycum*, Bolt. (=*Fulgur*, Montf.) with *Cassidulus*, Humphr., Gray.

XANCUS, Bolten, 1798, Mus. (edit. 1819, p. 94); Link, 1807, *l. c.* iii. p. 116.

Spire shorter than the last whorl; aperture above rounded, wide, below narrow; inner lip callous, with three folds; outer lip simple; shell heavy, without varices or spines; base elongated.

*Xancus pyrum*, Linn. sp., and *maculatus*, Link (Chemn. f. 917, 918).

This genus, by Humphrey called *Rapum*, by Fabricius *Pyrum*, by Dr. Gray *Turbinellus*, and by M. Deshayes *Scolymus*, is here characterized for the first time, and sufficiently.

CYMATIUM, Link, 1807, *l. c.* iii. p. 119.

Spire rather long; aperture above rounded; inner lip callous, with three folds; outer one marginated; a great number of crowded and ridged varices run down the shell, to which they are firmly grown; base little elongated.

*Cymatium polygonum*, &c.

This is quite identical with *Latirus*, Montf., or *Polygona*, Schum.

Vasum, Link, 1807, *l. c.* iii. p. 119. (*Vasum*, Bolt. emend.)

Spire rather long; aperture longitudinal; inner lip callous, with alternately larger folds; outer lip simple; shell without distinct varices; base elongated.

*Vasum Ceramicum*, Linn. sp., &c.

This is *Cynodonta*, Schum., *Scolymus*, Sw.

Tudicla, Link, 1807, *l. c.* iii. p. 120. (*Tudicla*, Bolt. emend.)

Spire very short, depressed; aperture above semicircular; inner lip callous, with a single fold; outer one simple; no varices or spines; canal straight, thin.

*Tudicla spirillus*, Linn. sp.

Subsequently established as *Haustellum a*, Schum., *Pyrella*, Swains., *Spirillus*, Schlut., *Spirilla*, Sow. jun.

Tritonium, Link, 1807, *l. c.* iii. p. 121.

Spire rather long; aperture above rounded; inner lip callous, generally with small folds; outer lip marginated; shell with varices that are commonly discontinuous; base rather elongated.

With respect to this genus I may refer to my 'Ind. Gen. Malacoz.' vol. ii. p. 609.

Distortrix, Link, 1807, *l. c.* iii. p. 122.

Spire rather long; whorls distorted; inner lip callous, folded; outer lip marginated; varices indistinct; base short-tailed.

*Distortrix anus*, Linn. sp., and *reticulata* (Chemn. f. 405, 406).

This name then is to be substituted in the place of *Persona*, Montf.

Gyrineum, Link, 1807, *l. c.* iii. p. 123.

Spire nearly equal to the last whorl; aperture rounded; inner lip callous, often slightly folded or granulated; outer lip marginated; shell compressed, with two opposite varices; base short or a little elongated.

*Gyrineum echinatum* (Chemn. f. 1274, 1275), *rana* (f. 1269, 1270), *bufonium* (f. 1240, 1241), *natator* (f. 1229, 1230), *verrucosum* (f. 1233, 1234), *caudatum* (f. 1045–1047), *scrobiculator*, = *Ranella*, Lamck.

Canrena, Link, 1807, *l. c.* iii. p. 126.

Spire short; aperture longitudinal; inner lip folded; outer lip interiorly strongly dentated; shell crowded with spines, but without distinct varices; base short.

*Canrena neritoidea* (Mart. f. 972, 973, 976–979) = *Ricinula*, Lamck. &c.

### Adelobranchea.

Astralium, Link, 1807, *l. c.* iii. p. 135.

Spire depressed; aperture broad, rounded, bending downwards.

*Astralium deplanatum* (Chemn. f. 1718–1720).—*Astralium calcar*, Gm., sp.

This genus will no doubt be acknowledged, being congruous with *Calcar*, Montf., Phil. It had been indicated before by G. Humphrey, under the name of *Sol*, and by Bolten as *Astræa*. But I think it should be extended farther, so as to receive *Imperator* and *Hercoles*, Montf., *Stellaria*, Schmidt, *Cyclocantha*, *Canthorbis*, subg., and *Tubicanthus*, Swains., *Bolma*, Risso, *Cookia*, Less., and *Astralium*, Phil.

UMBONIUM, Link, 1807, *l. c.* iii. p. 136.

Spire much depressed; aperture directed downwards, or to the side, simple; base showing a convex callus in the place of the umbilicus.

*Umbonium vestiarium*, Linn. sp., and *excisum* (Chemn. f. 1602).

That Link's name is to be adopted instead of *Globulus*, Schum., or *Rotella*, Lamck., can hardly be controverted; although his second species belongs to another tribe.

PYTHIA, Bolten, 1798, Mus. (ed. 1819, p. 74); Link, 1807, *l. c.* iii. p. 139.

Whorls, each of them composed of two pieces; aperture longitudinal, toothed on both sides.

*Pythia scarabæa*, Linn. sp.

This name is preferable to that of Fischer, *Polydonta*, which, although contemporary, is badly made, and wants correction.

## ACEPHALA.

SUNETTA, Link, 1807, *l. c.* iii. p. 148.

Equivalve, in front rather obtuse, closed; hinge with two cardinal teeth, lateral ones indistinct; anterior slope shorter than the furrow-shaped posterior slope; ligament external.

*Sunetta scripta* (Chemn. f. 261–265) = *Cuneus*, Muhlf. 1811 = *Meroë*, Schum. 1817.

TIVELA, Link, 1807, *l. c.* iii. p. 152.

Equivalve, longitudinal, without epiderm, closed; hinge with two cardinal and one elongated lateral tooth; anterior and posterior slopes equally elongated; ligament external.

*Tivela vulgaris* (Chemn. f. 362).—*T. tripla* (*Venus*), Linn. = *Trigona*, Muhlf. 1811.

MUSCULIUM, Link, 1807, *l. c.* iii. p. 152.

Equivalve, closed; hinge with two small cardinal teeth, no lateral ones; anterior and posterior slope nearly equal.

*Musculium lacustre* (*Tellina*), Linn.

The genus established here, fourteen years afterwards was published as *Pisidium*.

## TENTACULATA. See 'Ind. Gen. Malacoz.' ii. 541.

VERPA, Bolten, 1798, Mus. (ed. 1819, p. 49); Link, 1807, *l. c.* iii. p. 159.

Shell tubular, partly straight, partly winding, at one extremity open, at the other closed by a convex perforated blade.

*Verpa penis* (*Serpula*), Linn.

The oldest denomination of this genus that can be admitted; *Penicillus* (Da Costa, p.p.), Brug., being a term since the times of Rondelet consecrated to the Annulate class: all the other names, *Aquaria, Arytæna, Clepsydra, Aspergillum,* are of younger date, and will give way to *Verpa*, Bolt., defined by Link.

The following descriptions of new *Naticæ* were communicated by Dr. Philippi:—

### 11. Descriptiones Naticarum quarundam novarum ex collectione Cumingiana, auctore R. A. Philippi.

1. **Natica catenata**, Phil. *N. testâ subglobosâ, tenui, lividâ, zonis quatuor albis, maculas fuscas semilunatas exhibentibus pictâ; anfractibus rotundatis; spirâ breviusculâ, nigricante; sulcis radiantibus profundis superiorem anfractuum partem occupantibus; aperturâ semiorbiculari, intus purpureâ; umbilico amplo, margine acuto cincto; callo spirali satis valido medium umbilici occupante.*

Alt. $8\frac{1}{2}$, diam. $8\frac{2}{3}$ lin.

*Hab.* ——?

Differt a *N. tæniatâ*, Menke, anfractibus superius non horizontalibus sed declivibus, zonis longitudinaliter maculatis, callo labiali et callo umbilicali longe latioribus, etc.; a *N. depressâ* formâ globosâ, umbilico amplo, callo umbilicari mediano, etc.; a *N. maroccanâ* formâ globosâ, umbilico longe ampliore, callo ejus mediano, etc.

2. **Natica Incei**, Phil. *N. testâ depressâ, suborbiculari, solidâ, striatulâ, nitidâ, luteo-albidâ; anfractibus superius planatis; spirâ latè conicâ, acutâ; aperturâ semiorbiculari, valdè obliquâ; angulo basali columellæ incrassato; suturâ duplicatâ; callo maximo albo umbilicum magnum omninò implente.*

Alt. ab apice ad basin aperturæ $9\frac{1}{2}$, a dorso ad ventrem 6 lin.; diam. 12 lin.

*Hab.* ad insulam Raines, in freto Torres, ubi legit *Capt. Ince, R.N.*

Cave ne hanc speciem cum *N. Josephiniâ*, Risso (*N. Ollâ*, M. de Serr.), confundas, cui simillima est, et a quâ unice differt: ambitu paullo magis orbiculari; anfractibus minus rapide crescentibus; angulo umbilicum cingente paullo magis distincto; columellâ basi valde incrassatâ; callo umbilicari albo; colore fere albo in luteum vergente, præsertim versus basin, denique suturâ duplici. Linea superior suturæ a callo labiali, inferior a margine superiore anfractûs formatur, pariter ut in *Bulliis* d. Gray.—Operculum corneum.

3. **Natica intemerata**, Phil. *N. testâ globoso-ovatâ, solidâ, striatulâ, nitidâ, lacteâ, ad suturam versus umbilicum et in parte ultimâ anfractûs ultimi flavâ; anfractibus superius planiusculis; spirâ conicâ, circa $\frac{1}{5}$ altitudinis æquante; aperturâ semiorbiculari; columellâ rectâ, incrassatâ; umbilico magno, pervio, lacteo, sulco profundo lato exarato; funiculo semicylindrico ejus a callo labiali distincto.*

Alt. 18½, diam. 17½ lin.

*Hab.* in sinu Californiæ; legit *Rever. Steel.*

Simillima videtur *N. porcellaneæ* d'Orb., sed umbilico multo ampliore et colore flavescente differt; a *N. castâ,* Phil., testâ solidiore minus depressâ, umbilico albo angustiore, funiculo umbilicali longe magis elevato, etc. distinguitur; a *N. pede elephantis* testâ haud depressâ, funiculo umbilicali minus elevato satis superque discrepat.

4. Natica caribæa, Phil. *N. testâ ovatâ, sordidè albâ, ad suturam zonâ lacteâ munitâ; anfractibus superius vix convexis; spirâ brevi, acutâ; aperturâ semiorbiculari; umbilico parvo; callo lato cum labio confluente illum maximâ ex parte opplente.*

Alt. 8, diam. 7 lin.

*Hab.* in mari Caribæo ad insulam St. John.

Forma omnino accedit ad *N. mammillam* vel *N. lacteam* et umbilico pervio cum *N. lacteâ* convenit. Differt tamen umbilico longe angustiore, et callo ejus longe majore; an nihilominus mera varietas? *N. uberinâ,* d'Orb., testâ longe angustiore magis differre videtur.—Operculum tenue, corneum.

5. Natica vestalis, Phil. *N. testâ ovato-oblongâ, acutâ, lacteâ, substriatâ, nitidissimâ; spirâ acutâ, conicâ, sextam vel septimam totius altitudinis partem occupante; aperturâ semiorbiculari; callo convexo, crassissimo, cum callo labiali confluente, et sulco longitudinali ante marginem columellarem instructo, umbilicum fere omnino claudente.*

Long. 16½, diam. 16 lin.

*Hab.* ad oram Mozambique dictam; legit *Rev. Steel.*

Forte nihil nisi varietas *N. mammillæ,* a qua unice differt callo umbilicali crassiore convexiore, sulco longitudinali ante medium marginis columellaris, parte liberâ umbilicum cingente.

*Obs.*—Quæstio valde difficilis, utrum sub *N. mammillâ,* L. plures species lateant, an meræ varietates, vix examine singulorum specimінum in Musæis asservatorum decidi poterit, sed unice investigatione numerosæ gregis in ipso loco natali.

6. Natica? pomum, Phil. *N.? testâ ovatâ, inflatâ, tenuiusculâ, striatâ, glauco-fulvâ, basi albâ; anfractibus convexis, superioribus supernè subangulatis; spirâ quartam altitudinis partem æquante, subcontabulatâ; aperturâ ovato-oblongâ, propter anfractum penultimum prominentem fere lunatâ; umbilico angustissimo, perforato; labio parum calloso, basi supra umbilicum reflexo.*

Alt. 19, diam. 18½ lin.

*Hab.* ——?

Hæc species a reliquis Naticis valde aliena et forte ad genus *Amphibolam,* Schum. (*Ampullacera,* Quoy et Gaimard) mandanda est, etenim sinus latus satis profundus in parte supremâ labri hujus testæ in nullâ aliâ specie generis Naticæ observatur.

## 12. DESCRIPTION OF A NEW FORM OF LAMPREY FROM AUSTRALIA, WITH A SYNOPSIS OF THE FAMILY.

BY J. E. GRAY, ESQ., F.R.S., V.P.Z.S. ETC.

(Pisces, Pl. IV. V.)

The Lamprey which I have now to present to the attention of the Society differs in so remarkable a degree from any other known species, that, premising that I propose for it the name of *Geotria Australis* (Pisces, Pl. V.), I think it best to connect with the description a revision of the whole Family to which it belongs.

### PETROMYZONIDÆ.

Nasal aperture closed, and the palate entirely covered with skin.

*Lampredia*, Rafin. Anal. Nat. 94, 1818.—*Petromyzonidæ* (*Petromyzonini*), Bonap. Syst. Ichth. 1838; De Kay, Nat. Hist. of New York, 379.—(*Fam.*) *Hyperoartia*, Müll. Abhandl. Akad. Berlin, 1836, 77; Mag. Zool. & Bot. i. 406.—*Petromyzidæ*, Gray, Syn. B.M. 1842, 148, 150.

Müller (*Abhandl. Akad. Berlin*) divided the genera thus:—

1. *Petromyzon*, with visible teeth.
2. *Ammocœtes*, without visible teeth.

### *Synopsis of Genera.*

A. Petromyzonina. *Teeth distinct; eyes visible.*

1. **PETROMYZON.** Upper inner teeth two, conical, close together; lower single, crescent-shaped; labial teeth numerous, conical; lingual teeth two, pinnate (Pl. IV. f. 1).

2. **LAMPETRA.** Upper and lower teeth transverse, crescent-shaped; labial teeth in two submarginal rows; inner lateral teeth larger, two- or three-lobed, lingual teeth pectinate (Pl. IV. f. 2).

3. **GEOTRIA.** Upper and lower teeth transverse, crescent-shaped; upper lobed; labial teeth numerous, distant, acute, innermost largest; lingual teeth elongate, conical, arched (Pl. IV. f. 3).

4. **VELASIA.** Upper and lower teeth transverse, crescent-shaped; upper two-lobed; labial teeth numerous, crowded, truncate; innermost largest; lingual teeth elongate, arched.

5. **CARAGOLA.** Upper internal teeth two, far apart, three-lobed; lower crescent-shaped, nine-lobed; labial teeth transverse, band-like, four tubercles; lingual teeth flattened (Pl. IV. f. 5).

6. **MORDACIA.** Upper inner teeth two; lateral three-lobed; lower nine, conical, in an arched series; labial teeth conical, in a single submarginal series; lingual teeth elongate, conical, arched (Pl. IV. f. 6).

B. Ammocœtina. *Teeth none; eyes hidden.*

7. **AMMOCŒTES.**

## A. Petromyzonina. *Teeth distinct.*

### 1. PETROMYZON. (Pisces, Pl. IV. fig. 1.)

Upper inner teeth two, triangular, close together. Lower inner tooth single, large, crescent-shaped, many-toothed. Labial teeth conical, acute, numerous, in diverging, arched series; the inner one largest, and gradually becoming smaller near the edge. Tongue with two compressed, pectinated teeth above, and a broad, lunate, dentated tooth beneath, which is strongly bent up between the upper teeth in the centre.

Yarr. Brit. Fish. fig. p. 603; De Kay, Zool. New York, t. 56, 216 (bad).—*Petromyzon, sp.*, Linn. Syst. Nat.; Rafin. Anal. Nat.; Müll. Abhandl. Akad. Berlin, 1834, 77 (1836).—*Petromyzon,* Gray, Proc. Zool. Soc. 1851.

1. Petromyzon marinus. The Lamprey.

*Petromyzon marinus,* Linn. Bloch, iii. pl. 77; Linn. (édit. de Gmelin) Faun. Suec. 292; Artedi, Ichth. gen. 64. syn. 90; Neue Schrift. der Berl. Naturf. 7. 466; Schneid. Bloch, i. 530, 1801; Penn. Brit. Zool. iii. 102. pl. 10, 1776–78; Shaw, Gen. Zool. v. 251. pt. 2. pl. 133, 1804; Don. Brit. Fish. pl. 81, 1820–21; Flem. Brit. An. 163. sp. 1, 1827; Cuv. Règ. An. ii. 404, 1829; Müll. Mém. de l'Acad. Berlin, 1834, 78. t. 4. f. 1, 5; Osteol. t. 9, 65, 67, 68. f. 9; Yarr. Brit. Fish. 2 ed. ii. 598, 1841.—*Lamproie marbrée,* Daub. Encycl. Méth.; Bonn. Planches d'Hist. Nat. de l'Enc. Méth.—*Petromyzon maculosus,* Artedi, Ichth. gen. 64. syn. 90.—*Petromyzon lamproie,* Bloch, Hist. Nat. Poiss. 31, 77. pt. 13.—*Petromyzon maximus,* Cuv. Règ. An. ii. 118, 1817.—*Petromyzon,* Klein, Misc. Pisc. iii. f. 30. n. 3.—*Mustela sive Lampetra,* Belon, Aquat. 76; Salv. Aquat. f. 62 *b*.—*Lampetra major,* Schwenck. Theriotr. Siles. f. 451; Charlet, Onom. f. 153. n. 3; Aldrov. 539. liv. 4. c. 13; Jonston, liv. 2. tit. 2. c. 3. pl. 24. f. 5.—*Lamproie,* Coms. Hist. Nat. v. 284; Fermin, Surin. 85; Rond. 310. pt. 1. liv. 13; Valmont de Bomare, Dict. Hist. Nat.—*Lampetra Rondeletii, Lamprey or Lamprey-Eel,* Will. Ichth. 105. pl. 2. f. 2, 1685; Ray, Syn. f. 35. n. 3.—*Ioatzma unagi,* Kæmpfer, Voy. au Japan, i. pl. 12. f. 2. —*Il mustilla,* Forsk. Desc. Anim. f. 18.—*Plota fluta,* Authors.—*Lampetra, Lampreda kentmanni, lampreda, marina, mustela,* Gesn. (germ.) 180 *b*. et paralip. 22.—*Le Pétromyzon Lamproie,* Lacépède, Hist. Nat. Poiss. i. 2, 3. pl. 1, 1798.—*La Grande Lamproye,* Cuv. Règ. An. ii. 404, 1819.

*Hab.* European Seas.

2. Petromyzon Juræ. MacCulloch's Lamprey.

*Petromyzon Juræ,* MacCull. West. Isles, ii. 186, 187. t. 29. f. 1; Jen. B.V. A. 522.—*Petromyzon fluviatilis, var.*, Flem. Brit. An. 162.

*Hab.* Coast of Scotland, east shore; island of Jura.

Probably a variety of *P. marinus*: the drawing of the teeth shows it has no relation to *P. fluviatilis.*

3. ?PETROMYZON AMERICANUS. AMERICAN SEA LAMPREY.

*Petromyzon marinus*, Schæpff. Beobachtungen, &c. viii. 184; Mitch. Trans. Lit. & Phil. Soc. i. 461.—*Petromyzon americanus*, Lesueur, Amer. Phil. Soc. (N. S.) i. 382; Hist. N. A. Fish. ined. plate; Storer, Rep. on the Fishes of Massachusetts; De Kay, Nat. Hist. of New York, 379. pl. 66. f. 216. pt. 1; Zool. 1842.

*Hab.* N. America.

4. PETROMYZON NIGRICANS. BLUISH SEA LAMPREY.

*Petromyzon nigricans*, Lesueur, Amer. Phil. Soc. (N. S.) i. 385; Storer, Rep. on the Fishes of Massachusetts; De Kay, Nat. Hist. of New York, 381. pl. 79. f. 247 (teeth indistinct), pt. 1; Zool. 1842.

*Hab.* N. America.

5. PETROMYZON ARGENTEUS. SILVERY LAMPREY.

*Petromyzon argenteus*, Kirtland, Boston Journ. iii. 342. pl. 4. f. 3; De Kay, Nat. Hist. of New York, 382. pt. 1; Zool. 1842.

*Hab.* N. America, river Ohio.

## 2. LAMPETRA. (Pisces, Pl. IV. fig. 2.)

Upper inner tooth single, transverse, lunate, entire, with a conical prominence at each end. Lower inner tooth single, transverse, lunate, many-toothed, outer lobe largest. Labial teeth unequal, the outer numerous, small, subequal, conical, in a single, submarginal series, the inner larger, unequal; of the upper part small, in series; of the sides in a single series, larger, with two or three conical tubercles. Tongue with two compressed, pectinated teeth above, and a large, crescent-shaped, transverse tooth below, crenated on the edge, and with a larger, conical projection in the centre.

Yarr. Brit. Fish. fig. p. 604; De Kay, Nat. Hist. of New York, t. 79, 249 (bad).—*Petromyzon, sp.*, Linn., Cuv., Müll.—*Lampetra, sp.*, Ray.—*Lampetra*, Gray, Proc. Zool. Soc. 1851.

### * *Dorsal fins separate.*

1. LAMPETRA FLUVIATILIS. LAMPERN OR RIVER LAMPREY.

*Petromyzon fluviatilis*, Linn. Bloch, pt. 3. pl. 78. f. 1; Linn. (edit. de Gmel.); Müll. Prod. 37. n. 307; Aldrov. 587; Penn. Brit. Zool. v. pt. 106. pl. 10, 1776–78; Schneid. Bloch, 530, 2, 1801; Shaw, Gen. Zool. 257. pt. 2, 1804; Don. Brit. Fish. pl. 80, 1820–28; Flem. Brit. An. 404, 1827; Cuv. Règ. An. ii. 404, 1829; Mém. de l'Acad. Berlin, 78, 1834; Jen. Man. Brit. Vert. 521. sp. 210, 1835; Yarr. Brit. Fish. 2 ed. ii. 598, 1841; Parnell; Rich. Faun. Bor. 294, 1836. —*Petromyzon fluviatilis*, Cuv. Règ. An. ii. 118, 1817.—*Lamproie prycka*, Daub. Encycl. Méth.—*Nein-oga natting*, Faun. Suec. 106. —*Petromyzon, &c.*, Artedi, gen. 64. syn. 89. sp. 99.—*La petite Lamproie*, Bloch, 34. pt. 3. pl. 78. f. 1.—*La Lamproie branchiale*, Bonn. Planches de l'Encycl. Méth.—*Petromyzon, Prick* (*negen-oog*), Gronov. Mus. i. 64. n. 114; Zooph. 38.—*Mustela*, Pliny, liv. 9. c. 17. —*Mustela fluviatilis*, Belon, Aquat. 75.—*Lampetra subcinerea, maculis carens*, Salv. Aquat. 62.—*Lampetra, alterum genus*, Gesn. Aquat. 597.—*Lampreda*, Icon. Anim. 326.—*Lampetra, medium genus*, Will. Ichth. 106. tab. g. 2, 3. f. 1, 2; Ray, Syn. Pisc. 25. n. 1. —*Lampetra fluviatilis*, Aldrov. 587; Jonston, 104. pl. 28. f. 11; Schone, 41; Charlet, 159. n. 7; Marseli, Dan. Pann. iv. 2. t. 1, 1726. —*Lampetra fluviatilis, media*, Schwenck. Theriotr. Siles. 532.— *Jaatz me unagi*, Kæmpfer, Voy. dans le Japan, i. 156. pl. 12. f. 2.— *Minog*, Rzæzynski, 134.—*Lamproie*, Fermin, Hist. Nat. de Surinam, 85.—*Petromyzon*, Kramer, Elenchus, 38. n. 1; Klein, Misc. Pisc. iii. 29. n. 1. t. 1. f. 3.—*Le Petromyzon pricka*, Lacépède, Hist. Nat. des Poiss. i. 18, 1798.

*Hab.* Europe.

2. LAMPETRA PLANERI. FRINGED-LIPPED LAMPERN.

*Petromyzon planeri*, Linn. Bloch, viii. pl. 78. f. 3; Linn. (édit. de Gmelin); Schneid. Bloch, 531, 532, 4, 1801; Shaw, Gen. Zool. v. pt. 2. p. 259, 1804; Jen. Man. Brit. Vert. 522. sp. 211, 1835; Müll. Mém. de l'Acad. Berlin, 78, 1834; Cuv. Règ. An. ii. 404, 1829; Yarr. Brit. Fish. 2 ed. ii. 607, 1841.—*Lamproiea planer*, Bonn. Planches de l'Encycl. Méth.—*Le Pétromyzon planer*, Lacépède, Hist. Nat. des Poiss. i. 30. pl. 3, 1798.

*Hab.* Europe.

** *Dorsal fin in contact with the second.*

3. LAMPETRA SANGUISUGA. LEECH LAMPERN.

*Petromyzon Sanguisuga*, Lacépède, Hist. Nat. des Poiss. ii. 99. pl. 1; Supp. to Petromyzon; Shaw, Gen. Zool. v. pt. 2. p. 261, 1804. —*Petromyzon planeri, var.*, Cuv. Règ. An. ii. 118.

*Hab.* Europe, Seine.

A very doubtful species; Cuvier says it is the same as the former.

4. LAMPETRA LAMOTTENII. AMERICAN LAMPERN.

*Petromyzon Lamottenii*, Lesueur, Hist. N. A.; De Kay, Nat. Hist. of New York, 382. pl. 79. f. 249 (mouth), pt. 1; Zool. 1842.

*Hab.* N. America, New York.

### 3. GEOTRIA, n. g. (Pisces, Pl. IV. fig. 3.)

Upper internal tooth large, transverse, crescent-like, divided into four lobes; the two inner lobes small, acute; outer truncated. The lower internal tooth transverse, narrow, slightly sinuous. The labial teeth numerous, far apart, conical, acute, in arched series, diverging from the throat; the innermost one larger, rest small; the innermost one of the lower part on each side small, elongate, transverse, with two small, rudimentary tubercles. Tongue with two elongate, conical, arched teeth, with a triangular plate on the lower side of the base. Throat with a very large dilatable pouch. Dorsal fins two, far apart. Mouth very large, surrounded with rather large, transverse, torn leaves.

This genus chiefly differs from *Velasia* in the rudimentary state of the lower internal tooth, in the form of the labial teeth, in the large size of the oral disk, and the extraordinary development of the throat-pouch, which is found in a rudimentary state in the *Petromyzon marinus*. This development of the pouch is perhaps to adapt the animal to the long drought of the Australian rivers.

1. GEOTRIA AUSTRALIS. POUCHED LAMPREY. (Pisces, Pl. V.)

*Hab.* South Australia. Fresh water.

### 4. VELASIA. (Pisces, Pl. IV. fig. 4.)

Upper internal teeth large, transverse, crescent-like, divided into four flat, elongated lobes; the outer lobes largest. The lower internal teeth large, transverse, crescent-like, convex, denticulated on the edge. The labial teeth very numerous, truncated, in crowded, arched series, diverging from the throat; the inner ones large, and gradually diminishing in size to the edge. Tongue with two very large, long, curved teeth, with a triangular plate beneath at their base. Dorsal fins two, far apart. Mouth moderate, edged with transverse foliations.

1. VELASIA CHILENSIS. CHILIAN LAMPERN.

*Hab.* Chili. In fresh water.

### 5. CARAGOLA. (Pisces, Pl. IV. fig. 5.)

Upper inner teeth two, large, separate, lateral, submarginal, each with three acute tubercles. Lower inner teeth large, crescent-shaped, nine-lobed; the central and two lateral lobes on each side larger. The labial teeth in a subcircular, submarginal series, large, transverse, band-like, with three or four tubercles. Tongue with two flattened teeth, and a triangular, transverse plate below, with an acute process between the teeth on the upper edge. Dorsal fins two, far apart.

1. CARAGOLA LAPICIDA. CARAGOL.

*Hab.* West Coast of America.

### 6. MORDACIA. (Pisces, Pl. IV. fig. 6.)

Upper inner teeth two, separate, lateral, subtrigonal, each with three tubercles. The lower nine conical, acute, in an arched series; the five central smaller. Labial teeth small, conical, in a single, circular, submarginal series, with a single, additional, odd tooth in the centre above. Tongue with two conical, arched teeth. (Rich. Voy. Erebus & Terror, t. 38.)

*Petromyzon, sp.*, Rich. Voy. Erebus & Terror, t. 38, 1845.

1. MORDACIA MORDAX. AUSTRALIAN LAMPERN.

*Petromyzon mordax*, Rich. Voy. Erebus & Terror, t. 38, 1845.—*Mordacia mordax*, Gray, Proc. Zool. Soc. 1851.

*Hab.* Tasmania.

*Species of Doubtful Situation in the Family.*

1. PETROMYZON APPENDIX. SMALL LAMPREY.

*Petromyzon appendix*, De Kay, Nat. Hist. of New York, 381. pl. 64. f. 211. pt. 1; Zool. 1842.

*Hab.* N. America, Hudson River.

"A ring of irregular-shaped corneous processes within the oral orifice, and a large isolated double tooth of the same texture on the inferior portion of the mouth."—*De Kay.*

2. PETROMYZON TRIDENTATUS. TRIDENTATE LAMPREY.

*Petromyzon tridentatus*, Gairdener, Rich. Faun. Bor. Amer. 293, 1836; De Kay, Nat. Hist. of New York, 381. pt. 1; Zool. 1842.

*Hab.* N. America, Falls of the Walamet.

3. PETROMYZON ARGENTEUS. SILVERY LAMPREY.

*Petromyzon argenteus*, Bloch, t. 415. f. 2; Schneid. Bloch, 532. t. 102. f. 1, 1801; Shaw, Gen. Zool. v. pt. 2. p. 262, 1841.

*Hab.* Indian Seas.

4. PETROMYZON BICOLOR. BRILLIANT LAMPREY.

*Petromyzon bicolor*, Shaw, Gen. Zool. v. pt. 2. p. 263, 1804.—*Petromyzon niger*, Lacépède, iv. 667.

*Hab.* Europe, Seine.

5. PETROMYZON PLUMBEUS. LEADEN LAMPREY.

*Petromyzon plumbeus*, Shaw, Gen. Zool. v. pt. 2. p. 263, 1804.—*Petromyzon Septœil*, Lacépède, iv. 667.

*Hab.* Europe, Seine.

B. Ammocœtina. *Teeth none; eyes none.*

## 7. AMMOCŒTES.

Teeth none.

*Ammocœtes*, Dum. Zool. Anal.; Cuv. Règ. An. ii. 118, 1817; Müll. Abhandl. Akad. Berlin, 1834, 78 (1836).—?*Lampreda*, Rafin. Anal. Nat. 94, 1815.

1. AMMOCŒTES BRANCHIALIS. PRIDE or SANDPIPER.

*Ammocœtes branchialis*, Dum.; Flem. Brit. An. 164. sp. 3, 1828; Cuv. Règ. An. 406, 1829; Müll. Mém. de l'Acad. Berlin, 1834; Jen. Man. Brit. Vert. 522. sp. 212, 1835; Yarr. Brit. Fish. 2 ed. ii.

609, 1841.—*Petromyzon branchialis*, Linn. (édit. de Gmelin) 1815; Bloch, pt. 3. pl. 78? f. 2; Linn. Faun. Suec. 292; Wulff. Ichth. Borus. 15. n. 20; Müll. Prod. Zool. Dan. 37. n. 307 *b*; Kramer, Elench. 483; Penn. Brit. Zool. iii. 107. pl. 10, 1776–78; Shaw, Gen. Zool. 260, 1804.—*Petromyzon corpore annuloso, &c.*, Artedi, gen. 42. syn. 90.—*Lamproie branchiale*, Bonn. Planches de l'Encycl.; Daub. Encycl. Méth.—*Petromyzon*, Gronov. Zooph. 38. n. 160; Klein, Misc. Pisc. iii. 30. n. 4.—*Petromyzon cæcus*, Couch, Mag. Nat. Hist. v. 23. f. 60.—*Mustela fluviatilis*, Gesner, Aquat. 589; Icon. Anim. 286; Thierb. 159 *b*.—*Lampetra minima*, Aldrov. 539. —*Lampern, or Pride of the Isis*, Will. Ichth. 104.—*Pride*, Plot, Hist. of Oxford, 182. t. 10.—*Lampetra cæca*, Will. Ichth. tab. g. 3. f. 1; Ray, Syn. Pisc. 35. n. 2, 4; Couch, Loudon's Mag. Nat. Hist. v. 23. f. 9, 10.—*Lampreta neunange*, Jonston, t. 28. f. 10.—*Lamproyon et Lamprillon*, Rond. Hist. Poiss. ii. 202.—*Querder, Schlamquerder*, Schwenckf. Theriotr. Siles. 423.—*Der Kieferwurn*, Müll. l. c. iii. 234.—*Lampreyon*, Valmont de Bomare, Dict. Hist. Nat.—*Le Petromyzon lampreyon*, Lacépède, Hist. Nat. des Poiss. i. 26. pl. 2. f. 1, 1798.

*Hab.* Europe, rivers.

2. AMMOCŒTES RUBER. RED LAMPREY.

*Ammocœtes ruber*, Cuv. Règ. An. 406, 1829; Müll. Mém. de l'Acad. Berl. 78, 1834.—*Petromyzon ruber*, Lacépède, Hist. Nat. des Poiss. ii. 99. pl. 1; Supp. to Petromyzon; Shaw, Gen. Zool. v. pt. 2. p. 261, 1804.—*Ammocœtes branchialis, var.*, Cuv. Règ. An. ii. 118, 1817.

*Hab.* Europe, Seine.

3. AMMOCŒTES CONCOLOR. MUD EEL or BLIND EEL.

*Ammocœtes concolor*, Kirtland, Boston Journ. iii. 473. pl. 27. f. 1 *a*, *b*, 1841.

*Hab.* N. America, Mahoning and Scioto rivers.

4. AMMOCŒTES BICOLOR. COLOURED MUD LAMPREY.

*Ammocœtes bicolor*, Lesueur, Amer. Phil. Soc. (N. S.) i. 386.—*Ammocœtes bicolor*, Storer, Fishes of Massachusetts, 198; De Kay, Nat. Hist. of New York, 383, 679. f. 248. pt. 1; Zool. 1842.

*Hab.* N. America, Connecticut river.

5. AMMOCŒTES UNICOLOR. PLAIN MUD LAMPREY.

*Ammocœtes unicolor*, De Kay, Nat. Hist. of New York, 383. pl. 79. f. 250. pt. 1; Zool. 1842.

*Hab.* N. America, Lake Champlain.

## 13. Descriptions of Forty-three New Species of Cyclostomacea, from the Collection of Hugh Cuming, Esq.

By Dr. L. Pfeiffer.

1. **Cyclostoma Himalayanum**, Pfr. *C. testá umbilicatá, globoso-turbinatá, solidulá, costis spiralibus obtusis,* 10–12, *lineisque interjacentibus obsoletis sculptá, sub epidermide deciduá, . . . . albidá; spirá turbinatá, supernè rufá, acutiusculá; anfractibus* 5, *convexiusculis, ultimo ventroso, circa umbilicum angustum, infundibuliformem vix compresso; aperturá subverticali, circulari; peristomate simplice, continuo, breviter adnato, fusco-igneo, subincrassato, breviter expanso, supernè subangulato.—Operculum?*

Diam. maj. 48, min. 39, alt. 35 mill.

*Hab.* in Himalayâ.

2. **Cyclostoma euchilum**, Pfr. *C. testá umbilicatá, turbinato-subglobosá, solidulá, obliquè confertim striatá, lineis impressis distantioribus obsoletè clathratulá, albidá, violaceo-fusco et fulvo variegatá, parum nitidá; spirá turbinato-elevatá, apice acutiusculâ; anfractibus* $5\frac{1}{2}$, *convexis, ultimo rotundato, ad suturam subdepresso, medio albo-fasciato, basi confertim et valide spiraliter sulcato; umbilico mediocri, infundibuliformi; aperturá vix obliquá, subangulato-circulari, intus purpurascenti-carneo-micante; peristomate subcontinuo, albo, marginibus supernè dilatatis, callo subemarginato junctis, dextro et basali latissimis, fornicatim revolutis, sinistro angustato, vix reflexo.—Operculum?*

Diam. maj. 43, min. 32, alt. 28 mill.

*Hab.* Madagascar.

3. **Cyclostoma crassum**, Pfr. *C. testá umbilicatá, turbinato-globosá, crassá, striatá et minutè malleatá, rubello-fulvá, fasciis et lineis interruptis castaneis ornatá; spirá turbinatá, obtusiusculá; anfractibus* 5, *convexis, ultimo supernè turgido, infra medium cariná funiformi et fasciá latiore nigricante circumdato, basi subplanulato, circa umbilicum angustum, infundibuliformem subcompresso; aperturá obliquá, subangulato-rotundá, intus rubellá; peristomate duplice: interno continuo, externo crasso, expanso, ad anfractum penultimum breviter interrupto.—Operculum?*

Diam. maj. 27, min. 23, alt. 18 mill.

*Hab.* Liew Kiew, et var. minor in insulâ Ibyat (Bashee group).

4. **Cyclostoma expansum**, Pfr. *C. testá umbilicatá, turbinato-subglobosá, solidiusculá, spiraliter confertim striatá, opacá, supernè castaneo et albido variegatá; spirá conoideá, apice acutiusculá; anfractibus* 5, *convexiusculis, ultimo convexiore, dilatato, peripheriá subcarinato, basi fasciis angustis castaneis ornatá; umbilico angusto, pervio; aperturá subverticali, ferè circulari; peristomate subsimplice, continuo, breviter adnato, pallidè aurantiaco, undique æqualiter angulatim plano-expanso, margine subrevoluto.—Operculum?*

Diam. maj. 30, min. 22, alt. 19 mill.

*Hab.* ——?

5. **Cyclostoma unicolor**, Pfr. *C. testâ umbilicatâ, globoso-conicâ, solidâ, longitudinaliter confertissime et regulariter striatâ, spiraliter confertim sulcatâ, opacâ, fulvido-stramineâ; spirâ conicâ, subtruncatâ; anfractibus 6, convexiusculis, ultimo supernè et medio acutè carinato: carinâ tertiâ, validissimâ, circa umbilicum angustum, infundibuliformem, intus profundè spiraliter sulcatum; aperturâ parum obliquâ, angulato-circulari; peristomate simplice, marginibus callo lunatim exciso junctis, dextro expansiusculo, sinistro medio dilatato, patente.—Operculum?*

Diam. maj. 20, min. 17, alt. 16 mill.

*β. Majus, striis longitudinalibus obsoletioribus, albidum.*

Diam. maj. 28, min. 22, alt. 20 mill.

*Hab.* ——?

6. **Cyclostoma ponderosum**, Pfr. *C. testâ latè umbilicatâ, conoideo-depressâ, crassâ, ponderosâ, subtiliter et obliquè malleato-rugulosâ, olivaceo-fusculâ; spirâ breviter conoideâ, obtusâ; anfractibus 5, parum convexis, celeriter accrescentibus, ultimo lato, subdepresso, ad peripheriam obtusè funiculato-carinato; aperturâ obliquâ, angulato-ovali, intus albâ, nitidâ; peristomate crasso, recto, subcontinuo, supernè angulato-dilatato, margine columellari perarcuato.—Operculum membranaceum, pellucidum, fusculum, arctispirum.*

Diam. maj. 36, min. 30, alt. 20 mill.

*Hab.* Guatemala.

7. **Cyclostoma Dysoni**, Pfr. *C. testâ umbilicatâ, conoideo-orbiculatâ, solidâ, pliculis confertis undulatis, subconfluentibus sculptâ, fusco-olivaceâ, pallidius strigatâ et obsoletè fasciatâ; spirâ conoideâ, obtusulâ; anfractibus $4\frac{1}{2}$, convexiusculis, celeriter accrescentibus, ultimo rotundato; umbilico mediocri, conico; aperturâ ferè verticali, angulato-subcirculari, intus cærulescente, nitidâ; peristomate simplice, recto, supernè angulato, breviter adnato, margine dextro declivi, columellari subdilatato-patente.—Operculum?*

Diam. maj. 27, min. 22, alt. 16 mill.

*Hab.* Honduras (Mr. Dyson).

8. **Cyclostoma disculus**, Pfr. *C. testâ umbilicatâ, depressâ, discoideâ, solidiusculâ, nitidâ, alabastrinâ; spirâ planissimâ; anfractibus vix 4, convexiusculis, ad suturam impressam striatis, ultimo teretiusculo, subdepresso, in umbilico lato distinctius striato, anticè brevissimè soluto; aperturâ subverticali, circulari; peristomate continuo, simplice, recto.—Operculum?*

Diam. maj. 14, min. 11, alt. 5 mill.

*Hab.* ——?

9. **Cyclostoma desciscens**, Pfr. *C. testâ latè umbilicatâ, depresso-semiglobosâ, supernè confertim sulculatâ, albidâ; spirâ convexâ; anfractibus $4\frac{1}{2}$, convexiusculis, ultimo terete, anticè subito deflexo, basi lævigato; aperturâ ferè horizontali, lunato-*

*rotundatâ, intus albâ; peristomate incrassato, marginibus remotis, callo junctis, basali reflexo, columellari subito arcuatim ascendente.—Operculum?*

Diam. maj. 10, min. 8½, alt. 5½ mill.

*Hab.* Socotra.

10. CYCLOSTOMA MARGARITA, Pfr. *C. testâ perforatâ, globoso-conicâ, solidulâ, lævigatâ, nitidulâ, rubello-succineâ; spirâ conicâ, apice acutiusculâ, sanguineâ; anfractibus 5, convexiusculis, ultimo subrotundato; aperturâ parum obliquâ, ovali; peristomate interrupto, simplice, recto, margine columellari perarcuato, subincrassato.—Operculum?*

Diam. maj. 7, min. 6, alt. 6 mill.

*Hab.* in insulâ Rapâ Oceani pacifici.

11. CYCLOSTOMA (LEPTOPOMA) LATELIMBATUM, Pfr. *C. testâ perforatâ, globoso-conicâ, tenui, minutè spiraliter striatâ et lineis obtusis elevatis, subæquidistantibus cinctâ, diaphanâ, parum nitidâ, albâ, maculis et fasciis pallidè fulvis variegatâ; spirâ turbinatâ, acutiusculâ; anfractibus 5, convexiusculis, ultimo rotundato, medio lineâ acutè elevatâ subcarinato; umbilico angusto, vix pervio; aperturâ obliquâ, subcirculari; peristomate duplice, albo: interno interrupto, breviter porrecto, marginibus callo tenui junctis, externo undique æqualiter dilatato, angulatim patente, supra perforationem exciso.—Operculum?*

Diam. maj. 17, min. 13, alt. 11 mill.

*Hab.* in insulis Philippinis.

12. CYCLOSTOMA (LEPTOPOMA) REGULARE, Pfr. *C. testâ angustissimè perforatâ, conicâ, globosâ, tenui, lineis approximatis supernè æqualibus sculptâ, interstitiis spiraliter confertim striatâ, diaphanâ, albidâ, maculis fulvidis regulariter tessellatâ; spirâ turbinatâ, apice acutâ, pallidè corneâ, anfractibus 5½, convexiusculis, ultimo convexiore, infra liram periphericam inflato, obsoletius lirato; aperturâ obliquâ, lunato-circulari; peristomate interrupto, tenui, albo, breviter patente, margine columellari basi subangulatim dilatato. Operculum?*

Diam. maj. 12½, min. 10, alt. 10 mill.

13. CYCLOSTOMA (LEPTOPOMA) SERICATUM, Pfr. *C. testâ perforatâ, globoso-conicâ, tenui, pellucidâ, sericeâ, lineis obliquis, subdistantibus sculptâ, supernè lineis 4–5 elevatis, spiralibus munitâ, hyalino-albidâ, liris corneis (vel undique violacescenti-fulvâ, basi pallidiore); spirâ turbinatâ, acutâ, apice nigricante; anfractibus 5, superis parum convexis, ultimo inflato, subcarinato, infra carinam fasciâ unicâ castaneâ ornato, basi liris spiralibus nonnullis obsoletioribus sculpto; umbilico angustissimo, non pervio; aperturâ parum obliquâ, subemarginato-circulari; peristomate simplice, interrupto, tenui, horizontaliter patente, margine columellari medio sublingulatim dilatato.—Operculum?*

Diam. maj. 12, min. vix 10, alt. 9 mill.

*Hab.* in insulâ Borneo (Taylor).

14. Cyclostoma pleurophorum, Pfr. *C. testâ umbilicatâ, globoso-turbinatâ, tenui, longitudinaliter confertè striatâ et costulis filaribus, prominentioribus sculptâ, diaphanâ, parum nitidâ, albido-fulvescente; spirâ turbinatâ, apice acutiusculâ, corneâ; suturâ costis denticulatâ; anfractibus 5, convexis, ultimo subterete, anticè breviter soluto; umbilico mediocri, profundo, angulo cariniformi cincto; aperturâ subverticali, ovato-subcirculari; peristomate continuo, simplice, recto, margine columellari expansiusculo.—Operculum duplex, laminâ externâ testaceâ, 5-spiratâ, marginibus anfractuum liberis, internâ planâ, cartilagineâ.*
Diam. maj. 11, min. $9\frac{2}{3}$, alt. $9\frac{2}{3}$ mill.
*Hab.* Honduras.

15. Cyclostoma fasciculare, Pfr. *C. testâ perforatâ, acuminato-ovatâ, solidulâ, confertissimè costulato-striatâ, vix sericeâ, griseo-corneâ; spirâ conicâ, acutiusculâ; suturâ costularum fasciculis crenatâ; anfractibus 5, convexiusculis, ultimo rotundato, basi spiraliter sulcato; aperturâ vix obliquâ, ovali; peristomate simplice, recto, acuto.—Operculum terminale, testaceum, planum, paucispirum, anfractibus obliquè striatis.*
Long. 12, diam. 8 mill.
*Hab.* ——?

16. Cyclostoma Guatemalense, Pfr. *C. testâ perforatâ, oblongâ, solidulâ, subtruncatâ, striatulâ, olivaceo-fuscâ; spirâ convexiusculo-turritâ; anfractibus 6, parum convexis, ultimo angustiore, anticè descendente, breviter soluto, basi, circa perforationem apertam, compresso, nec carinato; aperturâ verticali, subcirculari; peristomate libero, albo, duplice: interno continuo, vix porrecto, externo dilatato, horizontaliter expanso, supra perforationem exciso.—Operculum?*
Long. 24, diam. 8 mill.
*Hab.* Vera Paz in Guatemalâ.

17. Cyclostoma canescens, Pfr. *C. testâ subperforatâ, oblongo-turritâ, truncatulâ, solidâ, lineis longitudinalibus et spiralibus elevatis regulariter clathratâ, parum nitidâ, griseo-albidâ; spirâ elongatâ; suturâ tuberculis confertis, albis crenatâ; anfractibus superstomate 7, vix convexiusculis, ultimo basi attenuato, circa perforationem obsoletam distinctius spiraliter sulcato; aperturâ verticali, angulato-ovali, intus fusco-carneâ; peristomate duplice: interno vix porrecto, externo undique breviter expanso, supernè angulato, anfractui penultimo breviter adnato.— Operculum?*
Long. 20, diam. 7 mill.
*Hab.* ——?

18. Cyclostoma violaceum, Pfr. *C. testâ subobtectè perforatâ, ovato-turritâ, truncatâ, solidulâ, lineis elevatis spiralibus et confertioribus longitudinalibus oblongo-granulatâ, haud scabrâ, non nitente, saturatè violaceâ; spirâ turritâ, truncatâ; anfractibus superstomate $4\frac{1}{2}$, convexis, ultimo rotundato; aperturâ subverticali,*

*ovali; peristomate simplice, albo, continuo, margine dextro subincrassato, angustè angulatim patente, columellari in laminam sinuosam, perforationem occultantem, nec claudentem, dilatato.—Operculum immersum, testaceum, planum, cinereum, paucispirum.*
Long. 20, diam. 11 mill.
*Hab.* ——?

19. Cyclostoma Shuttleworthi, Pfr. *C. testâ clausè umbilicatâ, oblongâ, truncatâ, spiraliter confertim plicatâ, lineis longitudinalibus obsoletè decussatâ, sericeâ, pallidissimè fulvidâ, fasciis valdè interruptis castaneis ornatâ; spirâ oblongâ; anfractibus superstomate 3, convexiusculis, ultimo basi rotundato; aperturâ verticali, angulato-ovali; peristomate duplice: interno brevi, expansiusculo, externo latè patente, concentricè striato, radiatim plicato et castaneo-radiato, ad columellam exciso, laminâ albâ fornicatâ umbilicum prorsus claudente.—Operculum terminale, cartilagineum, paucispirum, nucleo basali.*
Long. 22, diam. 11½ mill.
*Hab.* in insulâ Cubâ.

20. Cyclostoma radula, Pfr. *C. testâ perforatâ, ovato-oblongâ, truncatâ, tenui, lineis elevatis spiralibus et costis acutis longitudinalibus subtiliter asperato-decussatâ, pallidè corneâ, fasciis angustis, rufis, interruptis ornatâ, non nitente; spirâ sursum attenuatâ, latè truncatâ; suturâ profundâ, subsimplice; anfractibus superstomate 4, convexis, ultimo angustiore, rotundato; aperturâ verticali, circulari; peristomate duplice: interno continuo, vix porrecto, externo dilatato, horizontaliter patente, concentricè striato, ad anfractum penultimum subexciso, margine sinistro fimbriato-inciso.—Operculum planum, e duabus laminis compositum, externâ subtestaceâ, anfractibus 3½, nucleo subcentrali.*
Long. 14, diam. 7 mill.
*Hab.* Almendares prope Havana.

21. Cyclostoma ovatum, Pfr. *C. testâ obtectè perforatâ, oblongo-ovatâ, truncatâ, tenui, longitudinaliter confertim plicatulâ, sericeâ, fusco-corneâ, vel pallidissimè corneâ, maculis rufis seriatim dispositis ornatâ; spirâ ovato-conicâ, truncatâ; suturâ levi, irregulariter tuberculato-crenatâ; anfractibus superstomate 5, convexiusculis, ultimo paulo angustiore, basi obsoletè spiraliter sulcato; aperturâ verticali, rotundato-ovali; peristomate fusculo, duplice: interno breviter porrecto, externo undique dilatato, campanulato-expanso, radiato-costato, supernè angulatim reflexo, anfractui penultimo longè adnato, perforationem claudente, margine sinistro subauriculato, libero.—Operculum?*
Long. 17½, diam. 8 mill.
*Hab.* in insulâ Cubâ.

22. Cyclostoma Grateloupi, Pfr. *C. testâ perforatâ, oblongâ, pupiformi, truncatâ, tenuiusculâ, spiraliter confertim sulcatâ et costis longitudinalibus, confertis, non interruptis sculptâ, diaphanâ,*

*parum nitidâ, corneo-albidâ, fasciis strigatim interruptis castaneis ornatâ; spirâ sursum parum attenuatâ, latè truncatâ; suturâ levi, crenatâ: crenis supernè minutis, confertis, in anfractibus ultimis fasciculatim dilatatis, obtusis; anfractibus superstomate 4, vix convexiusculis, ultimo anticè breviter soluto, basi rotundato; aperturâ verticali, ovali; peristomate duplice: interno breviter expanso, adnato, externo campanulato-patente, rufo radiato, supernè cucullatim elevato, tum emarginato et anfractui penultimo adnato.—Operculum testaceum, planum, anfractibus 3, marginibus lamelloso-liberis.*

Long. 16, diam. 7 mill.

$\beta$. *T. minor, crenulis suturæ confertis, acutis.*

*Hab.* Yucatan, var. $\beta$. in Indiâ occidentali.

23. Cyclostoma histrio, Pfr. *C. testâ profundè rimatâ, ovato-conicâ, solidiusculâ, longitudinaliter confertim plicatâ, parum nitidâ, albidâ, strigis latis obliquis, angulosis, fuscis pictâ; spirâ elato-conicâ, vix truncatulâ; suturâ supernè minutè denticulatâ, anfractuum inferiorum subsimplice; anfractibus 4½, convexis, ultimo rotundato, basi ultra axin subproducto; aperturâ subobliquâ, subcirculari, intus nitidâ, fulvidâ, nebulosâ; peristomate lateritio, duplice: interno continuo, latè expanso, appresso, externo latiore, horizontaliter patente, supernè sinuato-angulato, ad anfractum penultimum breviter interrupto.—Operculum?*

Long. 20, diam. 11 mill.

*Hab.* in insulâ Jamaicâ.

24. Cyclostoma integrum, Pfr. *C. testâ perforatâ, turritâ, tenuiusculâ, integrâ, lineis obsoletè elevatis spiralibus et costulis confertis longitudinalibus (tertiâ vel quartâ quâvis validiore) subdecussatâ, fulvidâ, fasciis interruptis rufis cingulatâ; spirâ regulariter turritâ, apice obtusiusculâ; suturâ subconfertè denticulatâ; anfractibus 7, convexis, 2 primis lævigatis, ultimo rotundato, antrorsum breviter soluto, vix descendente, basi rotundato, fasciis 2–3 continuis rufis ornato; aperturâ vix obliquâ, ovali; peristomate subduplicato: interno continuo, adnato, externo patente, supernè subangulato-dilatato, tum emarginato, latere columellari undulato.—Operculum cartilagineum, planum, paucispirum.*

Long. 12, diam. 5 mill.

*Hab.* in Indiâ occidentali.

25. Cyclostoma harpa, Pfr. *C. testâ breviter rimatâ, oblongo-turritâ, tenuiusculâ, plicis longitudinalibus chordiformibus subdistantibus munitâ, cinnamomeo-carneâ, haud nitente, lineis rufis strigatim interruptis ornatâ; spirâ turritâ, integrâ, sursum nigro-violaceâ, apice obtusâ; suturâ profundâ, plicis prominentibus subcrenatâ; anfractibus 6, convexis, ultimo rotundato; aperturâ verticali, ovali-subcirculari; peristomate rubello, duplice: interno expansiusculo, appresso, externo undique vix dilatato-patente, anfractui penultimo breviter adnato.—Operculum?*

Long. 12, diam. 6 mill.

*Hab.* Almendares prope Havana.

26. Cyclostoma pingue, Pfr. *C. testâ umbilicatâ, oblongo-turritâ, truncatâ, solidâ, liris spiralibus obtusis undulatâ, striis longitudinalibus confertissimis sculptâ, oleoso-micante, cinnamomeo-fuscâ; suturâ profundâ, simplice; anfractibus superstomate* 4, *convexis, regulariter accrescentibus, ultimo rotundato; aperturâ subverticali, ferè circulari; peristomate albo, duplice: interno expansiusculo, adnato, externo continuo, horizontaliter expanso, anfractui penultimo brevissimè adnato, supernè angulato.—Operculum?*

Long. 12½, diam. 6 mill.

*Hab.* ——?

27. Cyclostoma pallidum, Pfr. *C. testâ perforatâ, ovato-turritâ, truncatâ, tenui, lineis elevatis spiralibus et confertissimis longitudinalibus (hic illic irregularibus, subconfluentibus) minutè decussatâ, pallidè corneâ, lineolis rufis interruptis obsoletè pictâ; suturâ profundâ, subsimplice; anfractibus superstomate* 4, *convexis, ultimo rotundato; aperturâ verticali, ovali-circulari; peristomate duplice, interno albo, porrecto, expansiusculo, externo dilatato, horizontaliter patente, concentricè striato, anfractui penultimo breviter adnato, margine sinistro angustiore.—Operculum terminale, testaceum, anfractibus* 3½, *obliquè striatis, marginibus subliberis.*

Long. 17½, diam. 8½ mill.

*Hab.* Almendares prope Havana.

28. Cyclostoma Cumanense, Pfr. *C. testâ perforatâ, turrito-oblongâ, truncatâ, tenui, longitudinaliter confertim plicatâ, sericeâ, pellucidâ, corneo-lutescente, maculis castaneis fasciatim dispositis ornatâ; suturâ plicis excurrentibus confertim subcrenatâ; anfractibus superstomate* 5, *subconvexis, ultimo basi rotundato, anticè breviter soluto, dorso carinato; aperturâ subverticali, ovali, supernè subangulatâ; peristomate libero, simplice, undique vix expanso.—Operculum cartilagineum, planum, paucispirum.*

Long. 15, diam. 7½ mill.

29. Cyclostoma turritum, Pfr. *C. testâ subperforatâ, turritâ, truncatulâ, lineis elevatis spiralibus et longitudinalibus regulariter clathratâ, albidâ, lineolis rufis interruptis cinctâ; suturâ subprofundâ, confertim denticulatâ; anfractibus superstomate* 6, *convexiusculis, regulariter accrescentibus, ultimo rotundato; aperturâ verticali, ovali, intus fulvidâ; peristomate subduplice: interno continuo, expansiusculo, externo supernè angulatim dilatato, margine dextro vix patente, columellari et sinistro exciso.—Operculum?*

Long. 16, diam. 7 mill.

*Hab.* Honduras (Mr. Dyson).

30. Cyclostoma diaphanum, Pfr. *C. testâ subperforatâ, oblongo-turritâ, truncatâ, tenuiusculâ, lineis elevatis spiralibus confertis, costulisque illas transgredientibus filaribus confertioribus decussatâ, diaphanâ, unicolore albidâ; spirâ elongatâ; suturâ irregulariter crenatâ; anfractibus superstomate* 4½, *convexis, sub-*

*æqualibus, ultimo anticè soluto, dorso carinato, basi rotundato, distinctius spiraliter sulcato; aperturá verticali, angulato-ovali; peristomate subsimplice, continuo, undique breviter expanso.—Operculum?*

Long. 12, diam. 5 mill.

*Hab.* —— ?

31. Cyclostoma lugubre, Pfr. *C. testá perforatá, turrito-oblongá, solidá; truncatá, liris obtusis spiralibus, costulisque submembranaceis illas transgredientibus sculptá, fusculá, violaceo-fusco latè unifasciatá; spirá parum attenuatá; suturá confertim et subacutè fasciculato-crenatá; anfractibus superstomate 5, convexiusculis, ultimo anticè breviter soluto, subdescendente, dorso compresso, basi distinctius spiraliter lirato; aperturá verticali, obliquè ovali; peristomate subsimplice, continuo, margine sinistro breviter, reliquis paulò latius expansis, subundulatis.—Operculum?*

Long. 16, diam. ferè 7 mill.

*Hab.* in insulâ Jamaicâ.

32. Cyclostoma Kusteri, Pfr. *C. testá perforatá, ovato-turritá, truncatá, tenui, sulcis spiralibus et costulis longitudinalibus confertis regulariter granulato-reticulatá, vix nitente, diaphaná, fusco-corneá, lineis obsoletis rufis interruptis pictá; spirá convexo-turritá, latè truncatá; suturá profundá, simplice; anfractibus superstomate 4, convexis, ultimo angustiore, rotundato; aperturá subverticali, subcirculari; peristomate duplice: interno breviter expanso, adnato, externo campanulato-expanso, concentricè striato, anticè concavo, rufo-radiato, supernè angulato, ad anfractum penultimum angustato.—Operculum?*

Long. 14, diam. 7 mill.

*Hab.* Honduras (Mr. Dyson).

33. Cyclostoma trochlea, Pfr. *C. testá perforatá, oblongo-turritá, truncatá, costis filaribus spiralibus et longitudinalibus subregulariter clathratâ, haud nitente, pallidè fusculá, punctis rufis subseriatis variegatá; spirá elongatá, trochleari, latè truncatá; suturá profundá, simplice; anfractibus superstomate 5, perconvexis; aperturá verticali, subcirculari; peristomate duplice: interno vix porrecto, externo horizontaliter expanso, supernè in rostrum recurvatum dilatato, ad anfractum penultimum breviter interrupto, latere sinistro inciso-crenulato.—Operculum?*

Long. 14, diam. 6 mill.

*Hab.* —— ?

34. Cyclostoma alternans, Pfr. *C. testá mediocriter umbilicatá, conoideo-depressá, tenuiusculâ, acutè multiliratâ, liris alternis minoribus, haud nitente, subepidermide pallidè lutescente fugace albá; spirá breviter conoideo-elevatá, obtusiusculá; suturá subcanaliculatá; anfractibus 5, convexiusculis, ultimo rotundato; aperturá parum obliquá, subcirculari; peristomate simplice, recto, fusco-limbato, subcontinuo, marginibus ad anfractum penultimum*

*callo nitido junctis.—Operculum membranaceum, planum, cereum, arctispirum.*
Diam. maj. 20, min. 16, alt. 10 mill.
*Hab.* Madagascar.

35. Cyclostoma rusticum, Pfr. *C. testâ latè umbilicatá, depressá, subdiscoideá, solidá, spiraliter confertim liratá, non nitente, sordidè albidá, pallidè fusculo irregulariter variegatá; spirá parum elevatá, vertice submucronato; anfractibus $4\frac{1}{2}$, convexiusculis, ad suturam subdepressis, ultimo terete, anticè descendente; aperturá diagonali, subcirculari, intus carneá; peristomate simplice, breviter expanso, marginibus callo brevi junctis, supero repando.—Operculum?*
Long. maj. $17\frac{1}{2}$, min. $13\frac{1}{2}$, alt. $7\frac{1}{2}$ mill.
*Hab.* —— ?

36. Cyclostoma psilomitum, Pfr. *C. testá mediocriter umbilicatá, depresso-conoideá, solidulá, virenti-luteá, vix nitidulá, lineis spiralibus subtilissimis, piloso-elevatis crebris obscurioribus cinctá; spirá breviter conoideá, obtusá; suturâ subcanaliculatá; anfractibus 4, convexis, ultimo terete, non descendente; aperturá ferè verticali, subcirculari, intus albidá; peristomate simplice, acuto, marginibus ferè contiguis, callo brevi junctis.—Operculum?*
Diam. maj. 15, min. 11, alt. 8 mill.
*Hab.* Venezuela.

37. Cyclostoma alatum, Pfr. *C. testá latè umbilicatá, conoideo-depressá, solidulá, obliquè confertim et inæqualiter costulatá, vix diaphaná, albidá, fasciis angustis pallidissime corneis variegatâ; spirâ brevissime conoideá, acutiusculá; suturá simplice; anfractibus 4, modicè convexis, ultimo subterete, anticè vix descendente, lilaceo-nebuloso; aperturá diagonali, subcirculari, intus lilaceo-fusculá; peristomate subduplice, latere dextro et basali connato, expanso, externo supernè alatim dilatato, latere sinistro subreflexo.—Operculum?*
Diam. maj. 16, min. 13, alt. 8 mill.
*Hab.* S. Yago de Cuba.

38. Cyclostoma scalare, Pfr. *C. testá angustè umbilicatá, conoideá, solidulá, obliquè striatulá, nitidulá, corneo-luteá; spirá elatá, scalari, apice acutá; suturá profundá; anfractibus $4\frac{1}{2}$, perconvexis, ultimo terete, anticè subsoluto; aperturá obliquá, circulari, intus margaritaceá; peristomate simplice, continuo, undique vix expansiusculo.—Operculum?*
Diam. maj. 9, min. 7, alt. $6\frac{1}{2}$ mill.
*Hab.* in insulis Philippinis.

39. Cyclostoma (Cyclophorus) lutescens, Pfr. *C. testá umbilicatá, depresso-conoideá, solidá, obliquè filoso-striatá, sericeá, fusco-lutescente; spirá breviter conoideá, apice acutiusculá; suturá profundá, simplice; anfractibus $4\frac{1}{2}$, convexis, rapide accrescentibus,*

*ultimo non descendente; umbilico mediocri, profundo; aperturâ vix obliquâ, rotundato-ovali; peristomate simplice, recto, acuto, continuo, breviter adnato, supernè vix angulato.—Operculum membranaceum, pallidè corneum, rectispirum, extus profundè concavum.*
Diam. maj. 20, min. 15½, alt. 12 mill.
*Hab.* in Brasiliâ.

40. Cyclostoma guttatum, Pfr. *C. testâ umbilicatâ, depressâ, solidâ, glabrâ, nitidâ, læte castaneâ, maculis albis subtriangularibus guttatâ; spirâ vix elevatâ, apice fuscâ, submucronatâ; anfractibus 4½, convexiusculis, celeriter crescentibus, ad suturam impressam striatulis; umbilico latiusculo, pervio; aperturâ parum obliquâ, circulari, intus albidâ; peristomate subduplice: interno vix distinguendo, externo expanso, supernè in linguam brevem, anfractui penultimo adnatam, dilatato.—Operculum?*
Diam. maj. 19, min. 15, alt. 9 mill.
*Hab.* ——?

41. Cyclostoma ignescens, Pfr. *C. testâ perforatâ, globoso-conicâ, tenui, lineis spiralibus subtilissimis confertim sculptâ, diaphanâ, nitidâ, ignescente; spirâ turbinatâ, obtusiusculâ; suturâ profundâ; anfractibus 4½, convexis, ultimo basi distinctius sulcato; aperturâ obliquâ, subcirculari; peristomate simplice, expanso, marginibus approximatis, non junctis.—Operculum?*
Diam. maj. 14, min. 11, alt. 11½ mill.
*Hab.* in Novâ Hiberniâ.

42. Cyclostoma fusculum, Pfr. *C. testâ angustissime umbilicatâ, globoso-conicâ, tenui, lineis elevatis spiralibus subconfertis, lirâque periphericâ validiore cariniformi sculptâ, vix nitidulâ, unicolore fusculâ, fasciâ unicâ angustâ rufâ infra carinam pallidam ornatâ; spirâ conicâ, obtusiusculâ; anfractibus 5, convexis, ultimo interdum carinâ, secundo superne notato, basi minute spiraliter sulcato; aperturâ parum obliquâ, rotundato-ovali; peristomate simplice, tenui, undique expansiusculo, marginibus approximatis, non junctis.—Operculum testaceum, planum, cinereum, 4-spirum, nucleo subcentrali.*
Diam. maj. 11½, min. 9½, alt. 9 mill.
*Hab.* ——?

43. Cyclostoma castaneum, Pfr. *C. testâ angustè umbilicatâ, globoso-conicâ, tenui, obliquè striatulâ et liris subacutis multis sculptâ, nitidâ, saturatè castaneâ; spirâ elevato-conicâ, apice obtusiusculâ; anfractibus 4½, angulato-convexis, ultimo liris 6 subæqualibus, pluribusque minoribus, confertioribus in umbilico munito; aperturâ parum obliquâ, subcirculari; peristomate simplice, tenui, undique expansiusculo, marginibus approximatis, non junctis.—Operculum testaceum, planum, paucispirum, nucleo subcentrali.*
Diam. maj. 11, min. 9, alt. 9 mill.
*Hab.* in insulâ Madagascar.

To this was added the following description of various species of *Helicea.*

## 14. Description of Fifty-four New Species of Helicea, from the Collection of Hugh Cuming, Esq.

By Dr. L. Pfeiffer.

1. **Streptaxis discus**, Pfr. *S. testâ latè umbilicatâ, discoideâ, subregulari, lævigatâ, albido-hyalinâ; spirâ planâ, vertice prominulo; anfractibus* 6½, *vix convexiusculis, irregulariter varicosis, ultimo depresso, subtus deviante, pone aperturam rotundato, deflexo; aperturâ subhorizontali, transversè sinuato-auriformi, plicâ obliquâ parietali et dentibus peristomatis coarctatâ; peristomate candido, reflexo, margine supero impresso, obsoletè dentato, dextro dente distinctiore munito, basi intus transversè calloso.*

Diam. maj. 14, min. 11, alt. 4½ mill.
*Hab.* —— ?

2. **Helix Richmondiana**, Pfr. *H. testâ imperforatâ, trochiformi, solidâ, striatâ et irregulariter granulatâ, nitidâ, castaneâ; spirâ castaneâ, sursum pallidiore, apice obtusiusculâ; anfractibus* 5½, *planis, sensim accrescentibus, ultimo compressè carinato, anticè vix deflexiusculo; basi plano; aperturâ perobliquâ, subrhombeâ, ad carinam rostratâ, intus livido-opalinâ; peristomate nigrofusco, subincrassato, marginibus callo tenui junctis, supero expanso, basali dilatato, reflexo.*

Diam. maj. 54, min. 47, alt. 30 mill.
*Hab.* ad Richmond River, Australia.

3. **Helix semidecussata**, Pfr. *H. testâ perforatâ, conoideâ, solidâ, supernè minute decussatâ, opacâ, unicolore rufo-fuscâ; spirâ conoideâ, acutiusculâ; anfractibus* 7, *vix convexiusculis, ultimo carinato, non descendente, basi convexo; aperturâ diagonali, angulato-lunari; peristomate simplice, recto, obtuso, margine columellari supernè brevissimè reflexiusculo.*

Diam. maj. 33, min. 30, alt. 18 mill.
*Hab.* in insulâ Mauritii.

4. **Helix Souleyetiana**, Pfr. *H. testâ perforatâ, conoideo-depressâ, solidulâ, rugoso-striatâ, supernè inter strias sub lente confertissimè undulato-lineatâ, pallidè fulvâ; spirâ breviter conoideâ, obtusiusculâ; anfractibus* 6 *subplanis, lentè accrescentibus, ultimo acutè carinato, infra carinam castaneo-fasciato, convexo, medio profundè excavato; aperturâ perobliquâ, angulato-lunari; peristomate simplice, marginibus subparallelis, dextro antrorsum subarcuato, columellari subincrassato, supernè brevissimè reflexo.*

Diam. maj. 52, min. 36, alt. 18 mill.
*Hab.* —— ?

5. **Helix radians**, Pfr. *H. testâ imperforatâ, depressâ, tenui, lævigatâ, nitidissimâ, pellucidâ, corneâ, strigis albidis irregulariter radiatâ; spirâ brevissimâ, convexâ; suturâ impressâ, submarginatâ; anfractibus* 4½, *planiusculis, ultimo non descendente, supernè*

*angulato, basi convexo, medio subimpresso; aperturâ subverticali, angulato-lunari; peristomate simplicissimo, recto.*
Diam. maj. 9, min. 8, alt. 4 mill.
*Hab.* in insulâ Tahiti.

6. Helix Gartneriana, Pfr. *H. testâ umbilicatâ, coniformi, solidâ, irregulariter elevato-striatâ, opacâ, nitidulâ, lutescenti-carneâ; spirâ conicâ, apice obtusâ; suturâ submarginatâ; anfractibus 7, convexis, ultimo peripheriâ subangulato, lineâ rubrâ cincto, anticè non descendente, subtus planiusculo; umbilico angustissimo, pervio; aperturâ parum obliquâ, subtetragonâ; peristomate albo, margine supero ferè angulatim arcuato, expanso, basali substricto, columellari lilaceo, brevi, verticali, reflexo.*
Diam. maj. 22, min. 19, alt. 22 mill.
*Hab.* ——?

7. Helix liturata, Pfr. *H. testâ imperforatâ, turbinato-semiglobosâ, striatâ, minutè rugoso-malleatâ, nitidulâ, roseo-carneâ, fasciis punctatim vel lituratim interruptis rufis ornatâ; spirâ depresso-turbinatâ, apice acutiusculâ; anfractibus 5, convexiusculis, ultimo vix descendente, peripheriâ rotundato, fasciâ castaneâ, subtessellatâ circumdato, basi convexiusculo; aperturâ diagonali, rotundato-lunari; peristomate simplice, margine dextro vix expansiusculo, columellari subcalloso.*
Diam. maj. 23, min. 20, alt. 15 mill.
*Hab.* ——?

8. Helix Brardiana, Pfr. *H. testâ umbilicatâ, subturbinato-depressâ, tenui, striatâ, fulvâ, pellucidâ, maculis luteis opacis irregulariter variegatâ; spirâ subturbinatâ, apice acutiusculâ; anfractibus 5, vix convexiusculis, ultimo non descendente, peripheriâ angulato, basi convexiore; umbilico angusto, pervio; aperturâ parum obliquâ, rotundato-lunari; peristomate simplice, tenui, undique expanso, margine columellari subdilatato, patente.*
Diam. maj. 14, min. 12, alt. 8½ mill.
*Hab.* in insulâ Bourbon.

9. Helix Sturmiana, Pfr. *H. testâ mediocriter umbilicatâ, depresso-semiglobosâ, solidâ, supernè confertim plicatâ, parum nitidâ, unicolore fusco-lutescente; spirâ brevi, convexâ, obtusâ; anfractibus 4, planiusculis, rapidè accrescentibus, ultimo anticè descendente, subdepresso, peripheriâ rotundato, basi convexo, lævigato; aperturâ parum obliquâ, lunato-ovali, intus margaritaceâ; peristomate simplice, marginibus conniventibus, callo tenui junctis, supero recto, basali subreflexo.*
Diam. maj. 22, min. 18½, alt. 12 mill.
*Hab.* ——?

10. Helix Layardi, Pfr. *H. testâ perforatâ, turbinatâ, tenuiusculâ, ruguloso-striatâ, parum nitente, pellucidâ, pallidè corneâ; spirâ conoideâ, apice acutiusculâ; anfractibus 5½, convexiusculis, ultimo carinato, non descendente, basi convexo; aperturâ parum*

*obliquá, rotundato-lunari, vix angulatá; peristomate recto, tenui, acuto, margine columellari supernè brevissimè reflexiusculo.*
Diam. maj. 13, min. ferè 12, alt. 9 mill.
*Hab.* in insulâ Ceylon (*Mr. Layard*).

11. Helix Woodiana, Pfr. *H. testá umbilicatá, depressá, tenui, lævigatá, nitidissimá, corneo-fuscá; spirá parum elevatá, vertice subtili; suturá impressá; anfractibus* 5, *vix convexiusculis, lentè accrescentibus, ultimo depresso, obsoletè angulato, non descendente, basi planiusculo; umbilico angusto, pervio; aperturá subverticali, lunari; peristomate simplice, recto, acuto, margine columellari vix reflexiusculo.*
Diam. maj. 10, min. 9, alt. 4½ mill.
*Hab.* in insulâ Ceylon (*Mr. Layard*).

12. Helix Forsteriana, Pfr. *H. testá umbilicatá, globoso-depressá, tenuiusculá, undique minutè granulatá, diaphaná, corneo-isabelliná, fasciis* 2 *angustis rufis supernè ornatá; spirá parum elevatá, convexo-conoideá, vertice acutiusculo; anfractibus* 6, *convexiusculis, ultimo anticè vix descendente, basi subplanulato; umbilico mediocri, pervio; aperturá obliquá, rotundato-lunari; peristomate simplice, marginibus remotis, dextro recto, basali reflexo, columellari in laminam triangularem, violaceo-fuscam, fornicatim dilatato.*
Diam. maj. 20½, min. 18, alt. 12 mill.
*Hab.* in Australiâ boreali.

13. Helix ptychomphala, Pfr. *H. testá umbilicatá, depresso-globosá, tenui, supernè confertim costulatá, lineis concentricis paucis obsoletè decussatá, nitidá, castaneo-corneá; spirá vix convexá; anfractibus* 4, *vix convexiusculis, ultimo non descendente, obsoletissimè angulato, basi convexo, lævigato, corneo-virente, circa umbilicum mediocrem, pervium confertim plicato; aperturá parum obliquá, irregulariter truncato-ovali, multo altiore quam latá; peristomate simplice, obtuso, margine columellari elongato, substrictè descendente, supernè fornicatim reflexo.*
Diam. maj. 22, min. 20, alt. 13 mill.
*Hab.* ad Portum Essington.

14. Helix Poiretiana, Pfr. *H. testá perforatá, conicá, solidá, striatulá, nitidá, carneo-albidá, strigis pallidè fusculis irregulariter pictá; spirá conicá, obtusiusculá; suturá impressá, subtilissimè crenulatá; anfractibus* 7, *vix convexiusculis, ultimo subrotundato, fasciá uná fuscá signato, anticè breviter descendente; aperturá diagonali, lunato-rotundatá; peristomate acuto, margine dextro repando, basali subincrassato, columellari fornicatim reflexo, perforationem ferè tegente.*
Diam. maj. 19½, min. 18½, alt. 23 mill.
*Hab.* ad Portum Essington.

15. Helix Dillwyniana, Pfr. *H. testá umbilicatá, depressá, solidá, irregulariter rugosá et subtilissimè malleatá, nitidá, cre-*

*taceâ; spirâ subplanâ, vertice papillatim prominulo, castaneo; anfractibus* $4\frac{1}{2}$, *planiusculis, ultimo rotundato, anticè breviter deflexo, basi inflato; umbilico angusto, non pervio; aperturâ perobliquâ, latè lunari, intus albâ; peristomate acuto, intus incrassato, margine supero subhorizontali et dextro arcuato expansis, basali substricto, reflexo, columellari brevissimo, angusto, patente.*

Diam. maj. 31, min. 25, alt. 14 mill.

*Hab.* ——?

16. Bulimus glaucophthalmus, Pfr. *B. testâ imperforatâ, ovato-oblongâ, solidâ, striatulâ, nigro-castaneâ, epidermide hydrophanâ fusco-cinereâ strigatâ; spirâ convexo-conicâ, apice saturatè cæruleâ, obtusâ; suturâ impressâ; anfractibus* 5, *convexiusculis, ultimo spirâ breviore, basi obsoletè angulato; columellâ subdeclivi, dilatatâ, planâ, albâ, basi subdentatâ; aperturâ obliquâ, truncato-ovali, intus lividâ; peristomate simplice, brevissimè expanso, margine dextro repando.*

Long. 36, diam. 25 mill.

*Hab.* in insulis Philippinis.

17. Bulimus suturalis, Pfr. *B. testâ imperforatâ, oblongo-conicâ, tenui, striatulâ, nitidulâ, alabastrino-albidâ; spirâ conicâ, apice obtusâ; suturâ parum impressâ, candidâ, confertissimè noduloso-crenatâ; anfractibus* 7, *planiusculis, ultimo* $\frac{3}{7}$ *longitudinis subæquante, infra medium obtusè angulato et fasciis* 2 *nigricanti-castaneis ornato; columellâ supernè fusco-callosâ, subtortâ; aperturâ obliquâ, truncato-oblongâ; peristomate simplice, vix expansiusculo.*

Long. 43, diam. 23 mill.

*Hab.* in Africâ occidentali.

18. Bulimus luctuosus, Pfr. *B. testâ perforatâ, oblongo-acuminatâ, solidulâ, obsoletè decussatâ, vix nitidulâ, atro-castaneâ; spirâ elongatâ, apice obtusâ; suturâ impressâ, submarginatâ; anfractibus* 7, *convexiusculis, ultimo* $\frac{1}{3}$ *longitudinis paulo superante, basi circa perforationem angustam subcarinato; columellâ verticali, levissimè arcuatâ; aperturâ parum obliquâ, subsemiovali, ad columellam angulatâ, intus lividâ; peristomate simplice, recto, margine columellari fornicato, breviter reflexo.*

Long. 39, diam. 17 mill.

*Hab.* in Africâ occidentali.

19. Bulimus infundibulum, Pfr. *B. testâ umbilicatâ, ovato-conicâ, subfusiformi, confertim striatâ, opacâ, albâ; spirâ convexo-conicâ, apice attenuatâ, roseâ, acutiusculâ; suturâ lineari; anfractibus* 9, *ferè planis, ultimo* $\frac{3}{7}$ *longitudinis subæquante, basi attenuato, circa umbilicum latum, pervium, infundibuliformem compresso; aperturâ subverticali, angustâ, oblongâ; peristomate simplice, marginibus supernè approximatis, dextro breviter expanso, columellari subdilatato, patente.*

Long. 18, diam. 7 mill.

*Hab.* in Andibus Peruvianis.

Nearly allied to *Bul. umbilicaris*, Souleyet.

20. BULIMUS SUBINTERRUPTUS, Pfr. *B. testá perforatá, subfusiformi-oblongá, tenuiusculá, lævigatá, sub lente spiraliter striatá, nitidulá, albidá, fasciis 5 latis, subinterruptis, spadiceis ornatá; spirá elongato-conicá, acutá; suturá parum impressá; anfractibus 6, planiusculis, ultimo spiram paulo superante, basi attenuato; columellá substrictá, recedente; aperturá obliquá, angustá, acuminato-semiovali; peristomate simplice, tenui, lutescente, margine dextro latè expanso, columellari triangulatim e basi dilatato, supernè latè reflexo.*
Long. 37, diam. $13\frac{1}{2}$ mill.
*Hab.* in Andibus Boliviæ.

21. BULIMUS VARICOSUS, Pfr. *B. testá perforatá, oblongo-acuminatá, tenui, striatá, sub lente obsoletè decussatulá, parum nitente, albidá, strigis castaneis sparsis irregulariter variegatá; suturá irregulariter crenulatá; spirá elongato-conicá, acutiusculá; anfractibus 6, convexiusculis, varicosis (varicibus prioribus obtusis, ultimo acutè prominente), ultimo spirá vix breviore, basi subcompresso; columellá supernè subtortá; aperturá parum obliquá, oblongo-ovali; peristomate simplice, tenui, margine dextro latè expanso, columellari dilatato, applanato, patente.*
Long. 35, diam. 14 mill.
*Hab.* in republicâ Mexicanâ.

22. BULIMUS ATTENUATUS, Pfr. *B. testá subperforatá, fusiformi-oblongá, solidiusculá, sublævigatá, nitidá, albá, strigis latis, maculatim subinterruptis, spadiceis, ornatá; spirá conicá, acutiusculá; anfractibus ferè 6, convexiusculis, ultimo spiram paulo superante, anticè striato, basi attenuato; columellá intrante, tortá, funali; aperturá vix obliquá, ovali-oblongá; peristomate simplice, tenui, margine dextro breviter expanso, columellari breviter reflexo, supernè adnato.*
Long. 34, diam. 13 mill.
*Hab.* Vera Cruz.

23. BULIMUS ELÆODES, Pfr. *B. testá imperforatá, ovatá, tenuiusculá, rugoso-striatá, transversè submalleatá, diaphaná, nitidá, castaneo-olivaceá; spirá conoideá, apice obtusá; anfractibus 4, convexiusculis, ultimo* $\frac{4}{7}$ *longitudinis subæquante, anticè descendente, basi subrotundato; columellá intrante, subtortá, roseá; aperturá subverticali, ovali, intus margaritaceá; peristomate roseo, subincrassato, breviter reflexo, marginibus callo supra regionem umbilici dilatato junctis.*
Long. 36, diam. 18 mill.
*Hab.* in Andibus Novæ Granadæ.

24. BULIMUS SCYTODES, Pfr. *B. testá imperforatá, ovato-conicá, tenui, remotè striatá, undique minutè granulatá (granulis non seriatis), haud nitente, fuscá, maculis rufis majoribusque nigricantibus irregulariter adspersá, lineis longitudinalibus flexuosis, angulatis, luteis, sæpe geminatis vel anastomosantibus pictá; spirá brevi, convexo-conicá, obtusiusculá; anfractibus 4, convexiusculis,*

*ultimo magno, $\frac{4}{7}$ longitudinis æquante, anticè deflexo, basi rotundato; columellá filari, intrante, leviter arcuatá; aperturá parum obliquá, ovali, intus concolore, nitidá; peristomate simplice, tenui, rubello, undique breviter expanso.*

Long. 35, diam. 17½ mill.

*Hab.* in Andibus Novæ Granadæ.

25. **Bulimus meleagris**, Pfr. *B. testá imperforatá, acuminato-ovatá, tenuiusculá, striis incrementi confertis et lineis spiralibus granulatá, parum nitente, fulvá, fusco-strigatá et irregulariter guttatá; spirá conicá, acutá; suturá subcrenulatá; anfractibus 5½, planiusculis, ultimo spiram paulo superante, convexiore, anticè descendente, basi rotundato; columellá filari, leviter arcuatá; aperturá obliquá, oblongo-ovali, intus submargaritaceá; peristomate simplice, recto.*

Long. 31, diam. 14 mill.

*Hab.* in Andibus Novæ Granadæ.

26. **Bulimus nigrolimbatus**, Pfr. *B. testá imperforatá, ovatá, tenui, rugosá, striis confertis spiralibus subgranulatá, parum nitidá, olivaceo-fulvá, strigis angustis castaneis variegatá; spirá conicá, apice obtusá; anfractibus 5, convexiusculis, ultimo spiram paulo superante, convexiore, basi rotundato; columellá tenui, subcallosá, subrecedente; aperturá obliquá, angulato-ovali, intus plicatá, margaritaceá; peristomate simplice, recto, obtuso, nigrolimbato.*

Long. 28, diam. 14 mill.

*Hab.* in Andibus Novæ Granadæ.

27. **Bulimus dubius**, Pfr. *B. testá subperforatá, oblongo-fusiformi, tenui, striatá, nitidulá, albo-lutescente, strigis spadiceis subundulatis ornatá; spirá gracili, elongato-conicá, apice obtusulá; suturá submarginatá; anfractibus 6, vix convexiusculis, ultimo spirá paulo breviore, basi attenuato, subcompresso; columellá subverticali, fere ad basin aperturæ elongatá; aperturá vix obliquá, oblongá, utrinque angustatá, intus concolore; peristomate simplice, recto, margine dextro levissime arcuato, columellari breviter fornicatim reflexo, subappresso.*

Long. 28, diam. 10 mill.

*Hab.* in Andibus Novæ Granadæ.

28. **Bulimus nubeculatus**, Pfr. *B. testá umbilicatá, ovato-oblongá, solidulá, sublævigatá, nitidá, pallidè corneá, saturatius nubeculatá; spirá conicá, apice obtusulá; suturá profundá; anfractibus 5½, convexis, ultimo $\frac{3}{7}$ longitudinis æquante, basi rotundato; columellâ verticali, ad basin aperturæ porrigente; aperturá parum obliquá, subellipticá, basi subangulatá, intus albidá; peristomate simplice, recto, margine dextro perarcuato, columellari dilatato, fornicatim reflexo, libero.*

Long. 16, diam. 8½ mill.

*Hab.* in Americâ centrali (*Morelet.*)

29. Bulimus Eganus, Pfr. *B. testâ perforatâ, conico-ovatâ, tenui, lineis longitudinalibus et spiralibus sub lente obsoletè decussatâ, vix nitidulâ, quasi pruinosâ, fusco-corneâ; spirâ conicâ, apice obtusâ; suturâ mediocri; anfractibus* 5, *modice convexis, ultimo spiram paulo superante, medio obsoletè angulato, basi vix compressiusculo; aperturâ obliquâ, subellipticâ, basi subangulatâ; peristomate simplice, tenui, margine dextro repando, columellari sursum dilatato, reflexo, subappresso.*

Long. 13, diam. $6\frac{1}{2}$ mill.

*Hab.* Ega Brasiliæ.

30. Bulimus acalles, Pfr. *B. testâ subperforatâ, ovato-conicâ, tenui, longitudinaliter confertim striatâ et distantius plicatâ, haud nitente, fulvo-griseâ; spirâ conicâ, obtusiusculâ, fulvescente; anfractibus* $4\frac{1}{2}$, *vix convexiusculis, ultimo spiram superante, basi rotundato; columellâ vix arcuatâ, subrecedente; aperturâ obliquâ, ovali, intus fulvo-carneâ; peristomate simplice, recto, margine dextro arcuato, columellari supernè reflexo, subadnato.*

Long. 10, diam. 6 mill.

*Hab.* in Andibus Peruvianis.

31. Bulimus Dillwynianus, Pfr. *B. testâ perforatâ, ovato-oblongâ, solidâ, ruditer striatâ et irregulariter malleatâ, vix nitidulâ, carneâ, fusculo punctatâ et variegatâ; spirâ convexo-conicâ, apice obtusulâ; suturâ impressâ, marginatâ; anfractibus* 5, *convexiusculis, ultimo spiram paulo superante, basi attenuato, subcompresso; columellâ valide torto-plicatâ; aperturâ vix obliquâ, sinuoso-oblongâ; peristomate albo, expanso-reflexo, margine dextro leviter arcuato, columellari supernè dilatato, perforationem fere claudente.*

Long. 39, diam. $16\frac{1}{2}$ mill.

*Hab.* in Andibus Novæ Granadæ.

32. Achatina fulgurata, Pfr. *A. testâ conico-ovatâ, tenui, striis longitudinalibus supernè confertis, in anfractu ultimo obsoletis, lineisque spiralibus granulatâ, corneo-luteâ, strigis latis fulguratis nigricantibus ornatâ; spirâ conicâ, obtusâ; anfractibus* $6\frac{1}{2}$, *superis parum convexis, ultimo ventricoso, lineis paucis spiralibus infra suturam granulato, infra medium sublævigato; columellâ cærulescente, vix arcuatâ, supra basin aperturæ elliptico-semiovali abruptè truncatâ; peristomate simplice, recto.*

Long. 67, diam. 36 mill.

*Hab.* in Africâ occidentali.

33. Achatina plicatula, Pfr. *A. testâ oblongo-fusiformi, tenui, longitudinaliter confertim plicatulâ, lineis spiralibus obsoletè decussatâ, diaphanâ, parum nitente, fusco-carneâ; spirâ elongato-conicâ, apice obtusâ; suturâ marginatâ, minutè crenulatâ; anfractibus* 7, *vix convexiusculis, ultimo spiram æquante, paulo convexiore, basi attenuato; columellâ callosâ, vix arcuatâ, ad basin aperturæ*

*semiovali, intus nitidissimæ, abruptè truncatâ; peristomate simplice, tenui.*
Long. 60, diam. 25 mill.
*Hab.* in Andibus Novæ Granadæ.

34. Achatina albicans, Pfr. *A. testâ ovato-conicâ, tenui, longitudinaliter striatâ, lineis spiralibus infra medium anfractu ultimi obsoletis decussatulâ, diaphanâ, vix nitidâ, albicante; spirâ pyramidatâ, obtusiusculâ; suturâ submarginatâ; anfractibus* $6\frac{1}{2}$, *vix convexiusculis, ultimo spirâ paulo longiore, basi vix attenuato; columellâ verticali, substrictâ, supra basin aperturæ rhombeo-semiovalis horizontaliter et breviter truncatâ; peristomate simplice, recto, margine basali leviter arcuato.*
Long. 46, diam. 23 mill.
*Hab.* in Africâ occidentali.

35. Achatina inornata, Pfr. *A. testâ turrito-oblongâ, solidâ, confertim striatâ, pallide fulvâ, strigis saturatioribus variegatâ; spirâ turritâ, apice obtusiusculâ; suturâ lævi, confertissime crenulatâ; anfractibus* $7\frac{1}{2}$, *planiusculis, ultimo* $\frac{2}{5}$ *longitudinis subæquante, basi vix compresso, læviore; columellâ perarcuatâ, albo-callosâ, obliquè abruptè truncatâ; aperturâ sinuoso-semiovali, intus albâ; peristomate simplice, obtuso, margine dextro repando.*
Long. 28, diam. 11 mill.
*Hab.* in insulâ Ceylon.

36. Achatina violacea, Pfr. *A. testâ oblongo-conicâ, solidâ, striatâ, parum nitente, violaceâ; spirâ elongato-conicâ, sursum rubellâ, apice obtusâ; suturâ lævi, marginatâ; anfractibus 7, convexiusculis, ultimo* $\frac{2}{5}$ *longitudinis subæquante, infra medium angulato; columellâ subarcuatâ, tenuiter callosâ, supra basin aperturæ obliquæ, angulato-ovalis breviter truncatâ; peristomate simplice, recto.*
Long. 38, diam. 18 mill.
*Hab.* in Africâ occidentali.

37. Achatina (Glandina) attenuata, Pfr. *A. testâ oblongo-fusiformi, gracili, tenui, lævigatâ, nitidissimâ, fulvâ, strigis arcuatis saturatioribus pictâ; spirâ elongato-conicâ; apice obtusiusculâ; suturâ lævi, subsimplice; anfractibus 7, planiusculis, ultimo* $\frac{3}{5}$ *longitudinis subæquante, basi attenuato; columellâ subcallosâ, leviter arcuatâ, subtortâ, basi obliquè truncatâ; aperturâ angustissimâ, oblongâ, supernè acutâ, prope basin sinistrorsum dilatatâ; peristomate simplice, margine dextro repando.*
Long. 31, diam. 11 mill.
*Hab.* in Americâ centrali.

38. Helix subrugata, Pfr. *H. testâ subperforatâ, depresso-turbinatâ, distanter subrugatâ, pellucidâ, pallide corneâ; spirâ breviter conoideâ, acutiusculâ; anfractibus* $5\frac{1}{2}$–6, *planiusculis, ultimo carinato, basi convexiusculo, lævigato; aperturâ diagonali,*

*subangulato-lunari; peristomate recto, acuto, margine columellari supernè vix reflexiusculo.*

Diam. maj. 13, min. 11½, alt. 6½ mill.

*Hab.* ad Clarence River, New South Wales.

39. HELIX OTOSTOMA, Pfr. *H. testâ angustè umbilicatâ, sublentiformi, solidâ, acutè carinatâ, striatâ et subtiliter granulatâ, olivaceo-nigricante vel castaneâ; spirâ subconoideo-convexâ, obtusâ; anfractibus 5, planiusculis, ultimo utrinque convexo, anticè subito deflexo, supra et infra carinam ascendentem profundè scrobiculato; aperturâ perobliquâ, subrhombeo-ensiformi, ringente; peristomate continuo, ad anfractum penultimum sinuoso, medio laminam longe intrantem emittente, margine supero dente conico obtusulo munito, basali medio subangulatim descendente, parte sinistrâ dentem validum, compressum, parte dextrâ dentem leviter et irregulariter bifurcatum gerente.*

Diam. maj. 31, min. 26, alt. 13 mill.

*Hab.* in Andibus Novæ Granadæ.

40. HELIX ANNULIFERA, Pfr. *H. testâ umbilicatâ, depressâ, lentiformi, carinatâ, solidâ, striatâ et minutè granulatâ, saturate castaneâ, ad carinam acutam latè albo-fasciatâ; spirâ breviter conoideâ, obtusâ; anfractibus 5, planiusculis, ultimo anticè breviter deflexo, basi convexo, anticè strangulato et scrobiculato; umbilico mediocri; aperturâ subhorizontali, irregulari, ringente; peristomate subincrassato, albo, continuo, margine parietali perarcuato, laminam elongatam intrantem emittente, in umbilicum descendente et cum basali parallelo juncto; margine basali usque ad medium substricto, acutè dentato, tum angulatim descendente, latè reflexo, laminâ linguæformi latâ munito, ad carinam ascendente, a dextro expanso canali angusto, supernè in annulum apertum desinente separato.*

Diam. maj. 34, min. 29, alt. 13 mill.

*Hab.* Panama.

This is the shell figured by Prof. E. Forbes in Trans. Zool. Soc. 1850, p. 53. Moll. t. 9. f. 4, under the name of *H. labyrinthus* var. *sipunculata*.

41. HELIX GASKOINI, Pfr. *H. testâ umbilicatâ, turbinato-depressâ, solidâ, obliquè rugato-plicatâ, nitidâ, albâ; spirâ conoideo-convexâ, obtusâ; anfractibus 5½, convexis, ultimo anticè deflexo, medio carinato, basi convexiusculo, sublævigato; aperturâ perobliquâ, lanceolato-ovali; peristomate subincrassato, marginibus callo umbilicum mediocrem, pervium semioccultante junctis, supero breviter expanso, basali reflexo.*

Diam. maj. 31, min. 27, alt. 15 mill.

*Hab.* in insulâ Haiti (*Sallé*).

42. BULIMUS TASMANICUS, Pfr. *B. testâ imperforatâ, ovato-conicâ, solidulâ, rugoso-striatâ, vix nitidâ, albidâ; spirâ conicâ, acutiusculâ, apice suberubescente; anfractibus 5, vix convexiusculis, ultimo*

*spiram paulo superante, basi rotundato; columellâ filari, subrecedente; aperturâ obliquâ, ovali, intus pallide fulvescente; peristomate simplice, recto, margine dextro leviter arcuato, columellari vix reflexiusculo, adnato.*

Long. 25, diam. 11 mill.

*Hab.* Van Diemen's Land.

43. Bulimus Belcheri, Pfr. *B. testâ imperforatâ, ovato-oblongâ, solidâ, glabriusculâ, fulvido-albidâ, castaneo-fasciatâ; spirâ convexo-conicâ, obtusâ; anfractibus 5, convexiusculis, ultimo spirâ vix breviore, ad suturam et basin latè, medio angustè fasciato; columellâ planâ, substrictâ, supra basin recedente; aperturâ obliquâ, truncato-oblongâ; peristomate subincrassato, nigricante, reflexiusculo.*

Long. 40, diam. $23\frac{1}{2}$ mill.

*Hab.* in insulis Philippinis.

44. Bulimus Newcombianus, Pfr. *B. testâ sinistrorsâ vix subperforatâ, ovato-turritâ, tenuiusculâ, plicis validis longitudinalibus sulcisque spiralibus sculptâ, olivaceo-fuscâ; spirâ turritâ, gracili, obtusulâ; anfractibus $5\frac{1}{2}$, summis planis, sequentibus convexiusculis, ultimo $\frac{3}{7}$ longitudinis subæquante, medio inflato; columellâ callosâ, substrictè recedente; peristomate recto, acuto, margine externo leviter arcuato, subrepando, columellari reflexo, subappresso.*

Long. $14\frac{1}{2}$, diam. $5\frac{1}{2}$ mill.

*Hab.* in insulis Sandwich.

This species is nearly allied to *Achatinella plicata*, Gould, which must be rather referred to the genus *Bulimus*, in which there being already a *Bulimus plicatus*, I have marked it in Mr. Cuming's Museum with the name of *Bulimus liratus*.

45. Bulimus porphyrostomus, Pfr. *B. testâ imperforatâ, ovato-conicâ, solidâ, rugoso-plicatâ, pallide carneâ, epidermide deciduâ fusco-olivaceâ indutâ; spirâ conicâ, obtusiusculâ; anfractibus 6, vix convexiusculis, ultimo spiram æquante, basi subattenuato; columellâ oblongè plicatâ, albâ; aperturâ verticali, angustâ, oblongâ, obliquè recedente, intus saturatè purpureo-castaneâ, nitidâ; peristomate incrassato, recto, albo, marginibus callo crasso, albo, medio tuberculifero junctis.*

Long. 62, diam. 28 mill.

Locality unknown.

46. Bulimus microdon, Pfr. *B. testâ breviter rimatâ, subfusiformi-turritâ, obliquè costulato-striatâ, albidâ, strigis sparsis corneis, lacteo-marginatis ornatâ; spirâ elongatâ, apice acutiusculâ; anfractibus 12, vix convexiusculis, ultimo $\frac{2}{9}$ longitudinis subæquante, infra medium filoso-unicarinato; columellâ supernè plicâ dentiformi munitâ; aperturâ vix obliquâ, truncato-ovali; peristomate simplice, margine dextro breviter expanso, columellari dilatato, angulatim reflexo.*

Long. 15, diam. 4 mill.

*Hab.* in insulâ Jamaica.

47. **Achatina Newcombi**, Pfr. *A. testâ turritâ, solidâ, longitudinaliter rugoso-striatâ, cingulis obtusè elevatis sculptâ, castaneâ; spirâ elongatâ, sursum in conum convexiusculum, acuminatum attenuatâ; anfractibus* 9, *planiusculis, ultimo* $\frac{2}{7}$ *longitudinis subæquante, infra medium angulato, fasciâ pallide cincto, basi nigro; columellâ lamellâ angustâ, tortâ, albâ munitâ, basi subtruncatâ; aperturâ obliquâ, subrhombeâ; peristomate simplice, recto.*
Long. 71, diam. 19 mill.
*Hab.* in insulis Sandwich (*Newcomb*).

48. **Achatinella melampoides**, Pfr. *A. testâ oblongâ, solidâ, ruguloso-striatâ, vix nitidulâ, saturatè fuscâ; spirâ convexo-conicâ, acutiusculâ; suturâ impressâ, submarginatâ; anfractibus* 6, *vix convexiusculis, ultimo spirâ paulo breviore, basi rotundato; columellâ medio acutè tuberculatâ; aperturâ verticali, sinuato-ovali; peristomate recto, acuto, intus labiato, margine columellari calloso, albo, appressè reflexo.*
Long. 13, diam. 5$\frac{2}{3}$ mill.
*Hab.* in insulis Sandwich.

49. **Partula nodosa**, Pfr. *P. testâ perforatâ, conico-ovatâ, solidulâ, obsoletè decussatulâ, castaneâ, ad suturam fasciâ latâ albâ et interdum nonnullis pallidis ornatâ; spirâ conicâ, acutâ; anfractibus* 5$\frac{1}{2}$, *planiusculis, ultimo spiram subæquante; columellâ supernè profundè plicatâ, tum subnodosâ; aperturâ subverticali, oblongâ, angustâ; peristomate extus vix expanso, intus callo acutè prominente munito, marginibus subparallelis, dextro strictiusculo.*
Long. 16, diam. 8 mill.
*Hab.* in insulis Tahiti et Navigatorum.

50. **Partula filosa**, Pfr. *P. testâ perforatâ, conico-ovatâ, solidâ, lineis impressis spiralibus, confertis sculptâ, haud nitente, castaneâ, strigis filaribus cinereis ornatâ; spirâ conicâ, obtusiusculâ; anfractibus* 5, *planiusculis, ultimo spiram æquante, convexiore; columellâ supernè vix plicatâ; aperturâ parum obliquâ, subtriangulari-semiovali; peristomate expansiusculo, intus callo crasso prominente munito.*
Long. 16, diam. 8$\frac{1}{2}$ mill.
*Hab.* in insulis Navigatorum.

51. **Helix glabriuscula**, Pfr. *H. testâ perforatâ, conoideo-semiglobosâ, tenui, lævigatâ, pellucidâ, nitente, lutescente, rufo angulato-lineatâ; spirâ convexo-conoideâ, acutiusculâ; anfractibus* 5$\frac{1}{2}$, *convexiusculis, ultimo non descendente, basi planiusculo; aperturâ obliquâ, subdepressâ, lunari; peristomate simplice, recto, margine columellari declivi, supernè vix reflexiusculo.*
Diam. maj. 3$\frac{1}{2}$, min. 3, alt. 2 mill.
*Hab.* in Novâ Seelandiâ (*Strange*).

52. Helix solida, Pfr. *H. testâ imperforatâ, conoideo-semiglobosâ, crassâ, striatâ, fulvescente, epidermide tenui, fuscâ, non nitente obductâ; spirâ convexâ, obtusâ, apice rubellâ; anfractibus 5, convexiusculis, ultimo convexiore, dimidium altitudinis formante, medio obsoletè angulato, anticè vix descendente; columellâ strictâ, declivi, latâ, albidâ; aperturâ obliquâ, subtetragono-lunari, intus albâ; peristomate subincrassato, vix expansiusculo, fusco-limbato.*

Diam. maj. 37, min. 33, alt. 27 mill.

*Hab.* prope Nanjan, insulæ Mindoro.

53. Helix oblita, Pfr. *H. testâ perforatâ, sublenticulari, tenuissimâ, supernè confertim arcuato-plicatâ, pellucidè, pallidè corneâ; spirâ depresso-turbinatâ, acutiusculâ; anfractibus 6, vix convexiusculis, ultimo non descendente, medio obtusè denticulato-carinato, basi convexiore, radiatim striato; aperturâ parum obliquâ, lunari; peristomate simplice, tenui, recto, margine basali leviter arcuato, ad perforationem breviter reflexo.*

Diam. maj. 23, min. 20, alt. 11½ mill.

*Hab.* in Indiâ.

54. Helix vilis, Pfr. *H. testâ umbilicatâ, depresso-globosâ, tenuiusculâ, granulato-striatâ, corneâ; spirâ breviter conoideâ, acutiusculâ; anfractibus 5, vix convexiusculis, celeriter accrescentibus, ultimo anticè deflexo, peripheriâ obsoletè subangulato, basi convexo; umbilico angusto, non pervio; aperturâ diagonali, fere circulari; peristomate intus valide labiato, marginibus approximatis, columellari supernè dilatato, patente.*

Diam. maj. 11, min. 9, alt. 6 mill.

*Hab.* ——?

## September 9, 1851.

Sir Roderick Impey Murchison, G.C. St.S., F.R.S. &c.,
in the Chair.

Professor Owen read an elaborate paper "On the Skeleton of *Troglodytes Gorilla*," which will be published in the Transactions of the Society.

## November 11, 1851.

W. J. Broderip, Esq., Vice-President, in the Chair.

Professor Owen read a paper "On the Capacity of the Cranium in the Negro, the Orang, and the Gorilla," which will be published in the Transactions of the Society for the present year.

The following papers were also read:—

## 1. DESCRIPTIONS OF SIXTEEN NEW SPECIES OF RISSOINA, A GENUS OF MARINE GASTEROPODOUS MOLLUSKS, FROM THE CUMINGIAN COLLECTION. BY ARTHUR ADAMS, SURGEON R.N., F.L.S. ETC.

### RISSOINA, D'Orbigny.

About eighteen species of this genus, as restricted by M. d'Orbigny, have been already described, inhabiting various countries. Those here named are a portion of the discoveries made by Mr. Cuming among the islands of the Philippine Archipelago, and are many of them of considerable size; and it is in these that the peculiarity of operculum is best seen.

The process of the semiovate, horny, subspiral operculum, first pointed out by D'Orbigny, is sometimes very long and slender, and very much resembles in appearance the analogous appendage of the operculum of *Nerita* and *Neritina*. The genus *Jeffreysia* of Alder, or *Rissoella* of Gray, has a similar appendage, but the position of the eyes, and the peculiar structure of the fore part of the head, place the latter genus in a different family, viz. *Pyramidellidæ*. The *Rissoinæ* may also readily be known from the neighbouring genus *Rissoa*, by the aperture being somewhat channeled anteriorly, whereas in *Rissoa* it is continuous and entire. The nature of the animal resembles *Rissoa*, according to D'Orbigny, who places the genus among the *Melaniadæ*.

1. RISSOINA PLICATA, A. Adams. *R. testâ turrito-subulatâ, subpyramidali, albâ, sordidâ, anfractibus octo, planis, longitudinaliter valdè plicatâ, transversim striatâ, plicis elevatis, posticè subangulatis, interstitiis transversim striatis; aperturâ semiovatâ, anticè subcanaliculatâ; labro anticè subdilatato, margine incrassato.*

*Hab.* Isle of Masbate. Mus. Cuming.

2. RISSOINA FASCIATA, A. Adams. *R. testâ subulato-turritâ, solidâ, sordidè albâ, rufo-fusco fasciatâ, anfractibus octo, convexiusculis, transversim tenuissimè (sub lente) striatâ, longitudinaliter plicatâ, plicis obliquis, æqualibus, subdistantibus; aperturâ semiovatâ, anticè subcanaliculatâ; labro subdilatato.*

*Hab.* Sydney, under stones, low water (*Mr. Strange*). Mus. Cuming.

3. **Rissoina scalariana**, A. Adams. *R. testâ subulato-turritâ, albâ, solidâ, anfractibus octo, convexiusculis, transversim tenuissimè striatâ, longitudinaliter costatâ, costis elevatis, æqualibus, subdistantibus, anfractu ultimo anticè callo circumdato; aperturâ semiovali, anticè subcanaliculatâ; labio anticè callo desinente; labro flexuoso, anticè subproducto.*
*Hab.* Isle of Burias, Philippines. Mus. Cuming.

4. **Rissoina pyramidalis**, A. Adams. *R. testâ turrito-pyramidali, sordidè albâ, solidâ, anfractibus octo, planiusculis, transversim tenuiter striatâ, longitudinaliter plicatâ, plicis obliquis, confertis, subelevatis, interstitiis transversim striatis; aperturâ semiovatâ, anticè subcanaliculatâ; labio anticè callo desinente; labro subdilatato, incrassato.*
*Hab.* Isle of Baclayon. Mus. Cuming.

5. **Rissoina d'Orbignyi**, A. Adams. *R. testâ subulato-turritâ, albidâ, subpellucidâ; anfractibus decem, convexiusculis, supremis costellatis, lineolis elevatis, transversis, et longitudinalibus, decussatâ; aperturâ semiovatâ, anticè subcanaliculatâ; labio anticè subcalloso; labro dilatato, subreflexo, margine flexuoso, subacuto.*
*Hab.* Isle of Luzon. Mus. Cuming.

6. **Rissoina clathrata**, A. Adams. *R. testâ subulato-turritâ, albâ, solidâ, anfractibus convexiusculis, lineis elevatis, longitudinalibus et transversis decussatis, valde clathratâ, anfractu ultimo anticè sulco transverso instructo; aperturâ semiovatâ, anticè subcanaliculatâ; labro flexuoso, anticè producto, margine extus varicoso.*
*Hab.* Isle of Bohol. Mus. Cuming.

7. **Rissoina micans**, A. Adams. *R. testâ turrito-subulatâ, albâ, solidâ, nitidâ, anfractibus convexis, novem, longitudinaliter plicatâ, plicis elevatis, subdistantibus, æqualibus, interstitiis transversim striatis, anfractu ultimo anticè valde sulcato; aperturâ semiovatâ, anticè subcanaliculatâ; labro flexuoso, anticè subproducto, extus varicoso.*
*Hab.* Island of Mindanao. Mus. Cuming.

8. **Rissoina nivea**, A. Adams. *R. testâ parvâ, subulato-turritâ, subpellucidâ, niveâ, subnitidâ, anfractibus convexiusculis, longitudinaliter plicatâ, plicis obliquis, anticè subobsoletis; aperturâ semiovatâ, anticè subcanaliculatâ; labro subdilatato, extus incrassato.*
*Hab.* Port Lincoln, Australia. Mus. Cuming.

9. **Rissoina monilis**, A. Adams. *R. testâ turrito-subulatâ, solidâ, fulvâ, anfractibus septem, planis, granulis moniliformibus ad suturas, longitudinaliter plicatâ, plicis confertis, angustis, æqualibus, interstitiis punctato-clathratis; aperturâ*

*semiovatâ, anticè subcanaliculatâ; labio subincrassato; labro extus valde varicoso, margine transversim striato.*

*Hab.* Philippine islands. Mus. Cuming.

10. **Rissoina bellula**, A. Adams. *R. testâ subulato-turritâ, albâ, semipellucidâ; anfractibus octo, convexiusculis, cingillis transversis, elevatis, granulosis, interstitiis longitudinaliter concinnè clathratis, ornatâ; anfractu ultimo sulco profundo instructo; aperturâ semiovatâ, anticè subcanaliculatâ; labio anticè callo terminato; labro flexuoso, margine extus valde varicoso.*

*Hab.* Isle of Calapan. Mus. Cuming.

11. **Rissoina striolata**, A. Adams. *R. testâ subulato-turritâ, albâ, tenui, pellucidâ; anfractibus undecim, supremis longitudinaliter plicatis, planulatis, prope suturas subangulatis; transversim striatâ, striolis confertis concentricis; aperturâ semiovatâ, anticè subcanaliculatâ; labio posticè incrassato, anticè callo desinente; labro dilatato, margine incrassato, subreflexo.*

*Hab.* Baclayon island, Philippines. Mus. Cuming.

12. **Rissoina costata**, A. Adams. *R. testâ subulato-turritâ, albâ, opacâ, solidâ, anfractibus septem, convexiusculis, longitudinaliter costatâ, costis crassis, elevatis, posticè subangulatis, anfractu ultimo anticè sulco transverso valido instructo; aperturâ semiovatâ, anticè subcanaliculatâ; labio anticè tuberculo terminato; labro subdilatato, margine varicoso, flexuoso.*

*Hab.* Cobiga, Peru. Mus. Cuming.

13. **Rissoina nitida**, A. Adams. *R. testâ turrito-subulatâ, albâ, solidâ, nitidâ, anfractibus novem, convexiusculis, longitudinaliter costatâ, transversim liratâ, liris ad costas nodulosis; aperturâ semiovatâ, anticè subcanaliculatâ; labio anticè callo desinente; labro extus incrassato, margine subacuto, anticè diaphano producto.*

*Hab.* Isle of Camaguing. Mus. Cuming.

14. **Rissoina concinna**, A. Adams. *R. testâ subulato-turritâ, albâ, solidâ, nitidâ, anfractibus septem, planiusculis, longitudinaliter plicatâ, plicis anticè evanidis, transversim striatâ, striis creberrimis, confertis; aperturâ semiovatâ, anticè subcanaliculatâ; labio calloso; labro margine valde incrassato et rotundato.*

*Hab.* Cagayan, Philippines. Mus. Cuming.

15. **Rissoina nodicincta**, A. Adams. *R. testâ subulato-turritâ, albâ, solidâ, anfractibus* 10–12, *convexis, longitudinaliter plicatâ, plicis angustis, distantibus, transversim tenuissimè striatâ, in medio anfractuum cingulâ elevatâ ad plicas nodosâ, ornatâ, suturâ nodulis moniliformibus cinctâ; aperturâ semiovatâ,*

*anticè subcanaliculatâ; labio anticè callo terminato; labro dilatato, extus incrassato, margine flexuoso.*
*Hab.* Isle of Capul, Philippines. Mus. Cuming.

16. RISSOINA CŒLATA, A. Adams. *R. testâ subulato-turritâ, albidâ, solidâ; anfractibus octo, convexiusculis, supremis clathratis, ultimo cingulis elevatis, æqualibus, subdistantibus, transversis, interstitiis lineis elevatis, longitudinalibus et transversis, decussatim ornato; aperturâ semiellipticâ, anticè subcanaliculatâ; labio calloso; labro anticè dilatato, margine incrassato, subreflexo.*
*Hab.* Siquijor. Mus. Cuming.

The two following species are true *Rissoæ*, characterized by the simple aperture, which is not channeled in front, and by the absence of the calcareous appendage to the operculum. Many species of small shells have been inaccurately referred to *Rissoa*, some of which belong, however, to entirely different families.

RISSOA BELLA, A. Adams. *R. testâ turrito-subulatâ, albâ, solidâ; anfractibus quinque, planiusculis; spirâ apice obtuso, lineis transversis, elevatis, concentricis, confertis, ornatâ; aperturâ ovali, anticè integrâ; labio subcalloso; labro subdilatato, extus marginato, margine flexuoso.*
*Hab.* Philippine islands. Mus. Cuming.

RISSOA ELEGANS, A. Adams. *R. testâ subulato-turritâ, albâ, semipellucidâ; anfractibus 7, convexiusculis; suturâ canaliculatâ, lineis elevatis transversis concentricis et longitudinalibus concinnè decussatâ; aperturâ ovali, subproductâ, anticè integrâ; labio calloso; labro anticè dilatato, extus varicoso, margine acuto, subreflexo.*
*Hab.* Philippines. Mus. Cuming.

## 2. DESCRIPTIONS OF SEVERAL NEW SPECIES OF MUREX, RISSOINA, PLANAXIS, AND EULIMA, FROM THE CUMINGIAN COLLECTION. BY ARTHUR ADAMS, F.L.S. ETC.

1. MUREX IOSTOMUS, A. Adams. *M. testâ ovato-fusiformi; spirâ acuminatâ; anfractibus planulatis, squamulosis, spinis acutis, in serie elevato disposito ornatis, cinereâ; anfractu ultimo spinis elevatis, bifidis, in seriebus quatuor dispositis instructo, varicibus sex, longitudinalibus; aperturâ ovato-oblongâ, intus violaceâ; labio subtuberculari; labro fimbriato.*
*Hab.* Philippines. Mus. Cuming.

2. MUREX SOLIDUS, A. Adams. *M. testâ solidâ, profundè umbilicatâ, albâ; spirâ brevi, obtusâ; anfractibus planulatis, longitudinaliter plicato-varicosis (varicibus in anfractu ultimo 7), transversim liratis; liris, ad plicas, incrassatis, interstitiis lon-*

*gitudinaliter cancellatis; aperturâ subrotundatâ; canali recto, aperturam æquante; labro simplici, intus lævi.*

*Hab.* Ichiboe, West Africa. Mus. Cuming.

3. Murex euracanthus, A. Adams. *M. testâ ovato-fusiformi, umbilicatâ; spirâ acuminatâ; anfractibus planis, serie tuberculorum spiniformium in medio dorsi, albâ, spinis et parte anticâ rubro tinctis; anfractu ultimo liris squamulosis, et spinis tubulosis, longis, in seriebus duobus dispositis, ornato; aperturâ ovatâ, oblongâ; labio anticè producto et tuberculato; canali brevi, subrecurvâ.*

*Hab.* ——? Mus. Cuming.

Figured by Mr. Reeve as *M. noduliferus,* which is very different from the present species.

4. Murex exasperatus, A. Adams. *M. testâ ovato-fusiformi, umbilicatâ, albâ, nitidâ; spirâ acuminatâ; anfractibus angulatis, in medio longitudinaliter plicato-varicosâ, transversim liratâ; liris subspinulosis ad plicas; aperturâ ovatâ; canali mediocri, subincurvato; labro intus sulcato.*

*Hab.* ——? Mus. Cuming.

5. Murex lignarius, A. Adams. *M. testâ ovato-fusiformi, subumbilicatâ; spirâ acuminatâ, rufo-fuscâ; anfractibus supernè excavatis, in medio liris duabus, elevatis, nodulosis; transversim liratâ, liris elevatis rugulosis, inæqualibus, longitudinaliter trivaricosâ, varicibus, in medio, spinis duabus, elevatis, fimbriatis; aperturâ ovato-rotundatâ, intus albâ; canali aperturam æquante, subrecurvato.*

*Hab.* West Africa. Mus. Cuming.

6. Murex fusiformis, A. Adams. *M. testâ fusiformi, cinereâ, fulvo variegatâ; spirâ productâ; anfractibus rotundis; varicibus longitudinalibus, subelevatis, nodospinosis, et lineis elevatis, transversis, latè clathratâ; aperturâ oblongo-ovatâ; canali aperturam æquante, recto; labro extus varicoso, intus sulcato.*

*Hab.* Africa. Mus. Cuming.

7. Murex spinosus, A. Adams. *M. testâ ovatâ, umbilicatâ, albâ, lineis rufo-fuscis transversis ornatâ; anfractibus rotundis, transversim liratâ; varicibus longitudinalibus regularibus* (6 *in anfractu ultimo*)*, spinis longis, rectis, acutis, armatis; canali subrecurvato, aperturam æquante; aperturâ ovato-rotundatâ.*

*Hab.* ——? Mus. Cuming.

8. Murex serotinus, A. Adams. *M. testâ ovato-fusiformi; spirâ peracutâ, serotinâ, longitudinaliter plicatâ, transversim liratâ; liris, ad plicas, nodulosis; aperturâ ovatâ, oblongâ; labio anticè bituberculato; labro extus incrassato, margine dentato, intus lirato; canali mediocri, subrecurvato.*

*Hab.* ——? Mus. Cuming.

9. **Murex bifasciatus**, A. Adams. *M. testâ ventricosâ, profundè umbilicatâ; spirâ brevi; anfractibus rotundatis; albâ; anfractu ultimo fasciis duabus, latis, rufo-fuscis ornato, transversim elevatè liratâ, liris rugosis; longitudinaliter varicibus æqualibus (in anfractu ultimo 9) subelevatis, rotundatis, fimbriatis; aperturâ ovato-rotundatâ; labio subproducto, fulvo; canali aperturâ breviore, valde recurvato.*
*Hab.* Senegal. Mus. Cuming.

10. **Murex crassus**, A. Adams. *M. testâ ovato-fusiformi, umbilicatâ, solidâ, fulvâ; spirâ mediocri; anfractibus rotundatis, supernè angulatis, obsoletè transversim liratâ, varicibus crassis, distantibus, irregularibus (4 in ultimo anfractu), ornatâ; aperturâ ovatâ, intus violaceâ; labro extus incrassato, intus dentato.*
*Hab.* China. Mus. Cuming.

11. **Murex Pagodus**, A. Adams. *M. testâ ovato-fusiformi; spirâ acuminatâ, lævi, albâ, anticè maculis fuscis sparsim pictâ; anfractibus septem, concavis, seriebus spinarum ornatis, spinis regularibus, tubulosis, recurvatis, marginibus fimbriatis; aperturâ subrotundatâ; columellâ lævi; canali recurvato, ad dextram inclinato, aperturam æquante.*
*Hab.* ——? Mus. Cuming.

12. **Murex excavatus**, A. Adams. *M. testâ ovato-fusiformi, subumbilicatâ, albâ, solidâ; spirâ acuminatâ; anfractibus concavis (quasi excavatis) ad partem anticam; in medio angulatis, longitudinaliter plicatâ, transversim liratâ, liris ad plicas nodulosis; anfractu ultimo liris duabus elevatis ornato; aperturâ semiovali; canali mediocri, vix recto; labro intus sulcato.*
*Hab.* ——? Mus. Cuming.

13. **Murex inornatus**, A. Adams. *M. testâ fusiformi, valde umbilicatâ; spirâ acuminatâ; anfractibus rotundis, albidâ, liris transversis, elevatis, squamulosis, et varicibus longitudinalibus, rotundatis (in anfractu ultimo 7), ornatâ; aperturâ ovali; canali subrecurvato, aperturam æquante; labro extus fimbriato, intus lirato.*
*Hab.* ——? Mus. Cuming.

14. **Murex obeliscus**, A. Adams. *M. testâ ovato-pyramidali, subtrigonali; spirâ elevatâ; anfractibus planis, apice obtuso, albâ, seriebus transversis macularum rufo-fuscarum ornatâ, transversim liratâ, liris subgranosis, varicibus tribus, longitudinalibus, varice intermedio, brevi, triangulari, ad partem posticam instructâ; aperturâ ovatâ; canali valde recurvato.*
*Hab.* ——? Mus. Cuming.

15. **Murex lyratus**, A. Adams. *M. testâ ovato-fusiformi, subumbilicatâ; spirâ acuminatâ; anfractibus planiusculis, albâ, varicibus rufo-fuscis ornatâ, transversim liratâ; liris trans-*

*versis, angustis, asperulatis, varicibus longitudinalibus, rotundatis, subfimbriatis (7 in ultimo anfractu); aperturâ subrotundatâ, intus albâ; columellâ posticè callosâ; canali brevi, recto, vix clauso; labro intus lirato.*
*Hab.* ——? Mus. Cuming.

16. Murex pulcher, A. Adams. *M. testâ ovato-fusiformi, subtrigonali; spirâ acuminatâ; anfractibus rotundatis, nodulosis, varicibus tribus subspinosis; liris transversis, elevatis, anfractu ultimo varicibus prominentibus, subspinosis, ornato; varicibus anticè fimbriatis et spinosis; aperturâ ovato-rotundâ; labio tuberculato; labro intus crenato-lirato, canali perlongo, subrecurvo, vix clauso.*
*Hab.* St. Croix, 60 fathoms; *M. Sueuson.* Mus. Cuming.

17. Murex Singaporensis, A. Adams. *M. testâ ovato-fusiformi; spirâ acuminatâ; anfractibus rotundatis; fulvâ, longitudinaliter plicatâ, plicis rotundis, transversim liratâ, liris asperulatis, squamulis aculeatis obsitis; aperturâ ovatâ, oblongâ, intus lividâ; canali aperturam æquante, subreflexo; labro intus dentato.*
*Hab.* Singapore. Mus. Cuming.

18. Murex niveus, A. Adams. *M. testâ ovatâ, umbilicatâ, niveâ; spirâ brevi, acuminatâ; anfractibus rotundatis; longitudinaliter plicatâ, plicis rotundis, prominentibus, crassis* (8–10 *in anfractu ultimo*), *transversim liratâ, liris squamulis, confertis, longitudinalibus, obsitis; aperturâ ovatâ, oblongâ; canali brevi, subrectâ; labro intus lirato.*
*Hab.* ——? Mus. Cuming.

19. Murex Cumingii, A. Adams. *M. testâ oblongo-fusiformi, trivaricosâ; spirâ subproductâ, anfractibus rotundatis, pallidè rufo-fuscâ, fasciis tribus, transversis, rufo-fuscis, ornatâ; varicibus longitudinalibus, tribus, continuis, obtusis, liris intermediis nodosis, liris transversis inæqualibus, rufo-fusco articulatis, instructâ; aperturâ ovali, labro intus crenato-lirato extus fimbriato, fimbriis non squamulosis, canali clauso, anticè recurvato.*
*Hab.* Philippines. Mus. Cuming.
Somewhat closely allied to *M. triquetra* of Born.

20. Mitra Marquesana, A. Adams. *M. testâ ovato-fusiformi, anfractibus planis, spirâ acutâ, carneolâ, maculis albis et lineis undulatis, longitudinalibus rufo-fuscis, eleganter pictâ, longitudinaliter substriatâ, transversim liratâ, interstitiis valde punctatis; aperturâ spiram majorem æquante, columellâ plicis quinque instructâ, labro margine crenato.*
*Hab.* Marquesas. Mus. Cuming.
Markings very similar to those of *M. serpentina*, Lamk. The *Mitra* figured in Mr. Reeve's Monograph, as *M. nebulosa* of Swainson, is quite different from that species, and requires therefore a change of name; I have called it *M. propinqua*.

21. Ancillaria lineolata, A. Adams. *A. testâ ovato-fusiformi; spirâ brevi, subacutâ, suturis albis, pallidè fulvâ, lineis longitudinalibus, confertis, fuscis, ornatâ; anfractu ultimo cingulâ elevatâ transversâ, ad marginem labri, in dente acuto desinente; aperturâ oblongâ; columellâ tortuosâ, albâ, anticè plicis obliquis instructâ.*

*Hab.* ——? Mus. Cuming.

A very pretty species, distinguished by the fine longitudinal brown lines.

22. Planaxis obscura, A. Adams. *P. testâ ovato-conicâ, epidermide fusco obtectâ; fusco-rufescente; anfractibus planis, suturâ distinctâ, transversim valde sulcatâ, interstitiis longitudinaliter striatis; aperturâ ovato-oblongâ, columellâ longitudinaliter sulcatâ; labro subdilatato, margine acuto, intus valde lirato.*

*Hab.* ——? Mus. Cuming.

23. Planaxis fulva, A. Adams. *P. testâ ovato-conicâ, fulvâ; spirâ acuminatâ, apice acuto, anfractibus planis, ultimo angulato, transversim tenuiter striatâ; aperturâ ovato-oblongâ; columellâ incurvatâ, anticè callosâ; labro margine subdilatato, extus incrassato, intus lirato.*

*Hab.* Swan River. Mus. Cuming.

Allied to *P. mollis*, Sowerby, but the last whorl is angulated.

24. Planaxis zonata, A. Adams. *P. testâ ovato-conicâ, rimatâ, glabrâ, nitidâ; spirâ acuminatâ; anfractibus convexiusculis, pallidè lutescente, zonulâ transversâ rufo-fuscâ cinctâ ad suturas, et, in anfractu ultimo, fasciis duabus transversis ornatâ, transversim tenuissimè striatâ; aperturâ ovatâ; columellâ incurvatâ; labro subdilatato, intus lirato.*

*Hab.* Calapan, Philippines. Mus. Cuming.

25. Planaxis cingulata, A. Adams. *P. testâ ovato-conicâ, solidâ, rimatâ; spirâ acutâ; anfractibus convexiusculis, fulvâ, zonulis rufo-fuscis transversis, prope suturas, duplicatis, ornatâ, longitudinaliter tenuissimè striatâ, transversim valde sulcatâ; aperturâ ovato-oblongâ, coarctatâ; columellâ incurvatâ; labro extus incrassato, intus dentato-lirato.*

*Hab.* China Seas. Mus. Cuming.

Species collected by me during the voyage of H.M.S. Samarang.

26. Planaxis succincta, A. Adams. *P. testâ ovato-conicâ, spirâ acuminatâ, apice acuto, anfractibus convexiusculis, pallidè fuscâ, fasciis linearibus, transversis, multis, rufo-fuscis, ornatâ, longitudinaliter substriatâ; anfractu ultimo transversim sulcato; aperturâ ovato-oblongâ; columellâ fuscâ; labro intus sulcato.*

*Hab.* Peru, and the West Indies. Mus. Cuming.

Allied to *P. lineata* of Montagu, but of larger growth and different form.

27. Planaxis buccinea, A. Adams. *P. testâ ovatâ; spirâ brevi, acutâ, apice obtuso, rubro; anfractibus planis, plicato-granulosis; nigro-fuscâ, cingillis articulatis, transversis, ornatâ; longitudinaliter substriatâ, transversim valde sulcatâ; aperturâ ovato-oblongâ; columellâ excavatâ; labro intus creno-plicato, extus incrassato, varicoso.*

*Hab.* West Indies. Mus. Cuming.

28. Planaxis labiosa, A. Adams. *P. testâ ovato-conicâ, spirâ acutâ, anfractibus convexiusculis, atro-purpureâ, fasciis pallidis* (5–6) *transversis, in anfractu ultimo; transversim striatâ; aperturâ ovato-oblongâ; columellâ incurvatâ et dilatatâ; labro dilatato, margine reflexo et incrassato, intus lirato.*

*Hab.* Sandwich Islands. Mus. Cuming.

29. Lagena Californica, A. Adams. *L. testâ solidâ, ovato-fusiformi; spirâ, in medio, tumidâ, anfractibus planiusculis, infernè nodospinosis, albâ, cingulis transversis, elevatis, rufo-fuscis articulatis ornatâ, interstitiis obscuris, fuscis; anfractu ultimo longitudinaliter plicato, seriebus duobus tuberculorum subspinosorum instructo; aperturâ ovato-oblongâ; columellâ carneolâ, plicis quatuor, albis, obliquis; labro intus lirato.*

*Hab.* California. Mus. Cuming.

Allied to *L. picta*, Lamk., but of different form and markings.

30. Nassa Australis, A. Adams. *N. testâ ovato-fusiformi; spirâ acuminatâ, pallidè olivaceâ, fasciis tribus, transversis, fuscis, ornatâ, longitudinaliter valde plicatâ, interstitiis valde transversim sulcatis; anfractu ultimo anticè liris transversis subgranosis, posticè, prope suturam, tuberculis moniliformibus ornato; aperturâ ovato-rotundatâ, intus fuscâ, et dentato-liratâ; labro margine albo, posticè valde inflexo et dentato.*

*Hab.* Australia. Mus. Cuming.

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November 25, 1851.

W. J. Broderip, Esq., F.R.S., Vice-President, in the Chair.

The following papers were read:—

## 1. On a species of Æquorea inhabiting the British Seas. By Prof. Edward Forbes, F.R.S.

(Radiata, Pl. IV.)

In the first volume of the 'Wernerian Memoirs' a "*Medusa æquorea*" is mentioned by Prof. Jameson as an inhabitant of the seas of the north of Scotland, and in the 'History of British Animals' by Dr. Fleming, the name "*Geryonia æquorea*" is used to designate it. As no description or figure was ever published of this creature, and as the diagnosis of the "*Medusa*" to which Linnæus applied the name of "*æquorea*" was too brief for identification, it is possible that some one out of several Acalephæ inhabiting our seas might have been intended.

It is also possible, however, that a true *Æquorea* had been seen, for there is a most beautiful species of this genus an inhabitant of the Scottish seas. I met with it for the first time in August 1850, when exploring the Minch (the channel between the outer Hebrides and Skye) in company with Mr. MacAndrew and Prof. Goodsir, with the advantages of the appliances for natural-history research with which Mr. MacAndrew has furnished his yacht, the *Naiad*. As there is neither figure nor description of any British *Æquorea* to be found, and as considerable obscurity hangs around the Atlantic species of the genus, I have drawn up the following notice.

A number of individuals were observed: they were swimming near the surface of the sea on a very calm and hot day: they varied in size, from three inches in diameter to as much as half a foot or more: they resembled broad shield-shaped discs of glass, slightly prominent above, incurved at their sides and concave beneath: through the discs were seen shining the pendent brown-tinged stomach, and around it, like so many equal stripes or rays proceeding to the margin, the linear violet genital glands: from the margin depended highly-contractile violet tentacles.

The umbrella is broad, shallow, and disc-shaped, its outline describing a gentle curve. It is hyaline, not very thick, and quite smooth. The central portion of its interior, occupying about one-fourth of its diameter, has dependent from it the membranous veil-like walls of the stomach; these hang not quite so low as on a line with the margins of the umbrella. The stomach, although equal in width throughout, may be divided into two regions, an upper and a lower. The latter has a furbelowed and somewhat scalloped, but not cirrated margin, and may be regarded as the mouth. The former is marked internally by eight bands of transverse fibres, separated by as many longitudinal ones; these appear to be muscular. The whole of the membrane of the stomach and lips is tinged with pale foxy brown, partly disposed in streaks. Around the upper and inner margin of the cavity are the orifices of the gastro-vascular canals; these run, without dividing or anastomosing, to the circular marginal canal of the umbrella. In a specimen five inches across, they were 136 in number. From the lower side of each canal depend two narrow, rather wavy membranes of a violet colour, causing the ray-like streaks that shine so conspicuously through the disc; each of these arises gradually near the superior extremity of a gastro-vascular canal, and ceases abruptly at about one-eighth of the entire length of the canal from the margin: they are the genital glands. At the junction of each alternate gastro-vascular canal with the circular marginal one is the bulb-like base of a marginal tentacle: these tentacles arise from ovate bulbs and gradually taper to a fine point. The bulbs are pale, but the tentacle is tinged with violet. Opposite the intermediate canal there is a smaller bulb with a tentacle, hollow and containing corpuscles in its centre, and on each side, between it and the neighbouring tentacle, is a still smaller lobe-like body. Along the upper margin of the circular canal are very minute pedunculated organs that move to and fro. On the bulb at the base of the tentacula is a minute tongue-shaped process at the base of a depression; at its own base the ocellus or rudimentary eye is lodged. When seen laterally, the peculiar tissue of the base of the tentacles is observed to be set obliquely. Within the umbrella, from a line just opposite the tentacular circle, a short but rather broad veil with a simple edge is seen to depend; this veil is tinged with pale brown. A band of motor tissue, forming a sphincter to the umbrella, accompanies the circular vessel.

According to the size of the example, the number of genital glands and of tentacula varied: they increase with age. The smallest number of tentacula seen was sixteen, and there is reason to believe that they are never fewer.

To ascertain whether this beautiful animal be the *Medusa æquorea* of Linnæus and the naturalists who wrote during his time, it is necessary to inquire into the history of that species. The name just mentioned occurs first in the 'Iter Hispanicum' of Peter Loefling, published in 1758. In his journal of observations on the 18th of April, at Cumana, he notices, along with *Medusa* (i. e. *Aurelia*) *aurita*, *Medusa pelagica* (*Pelagia cyanella?*), and *Velella*, another Medusa, which he styles *Æquorea*, and describes as "*orbicularis, planiuscula, tentaculis plurimis ex margine inflexo, branchiis nullis.*" This notice, which occurs at page 105 of the Swedish edition of his 'Travels,' is the entire original foundation for numerous references in after-authors. Linnæus, in the first instance, adopted Loefling's name and brief record, which, when read with our present knowledge of *Acalephæ*, barely indicates the genus to which the animal observed probably belonged. In 1775, the descriptions and figures of animals observed during his journey to the East by the lamented Forskäl were published under the superintendence of Carsten Niebuhr. Among them was a representation and description of a *Medusa*, referred to the *æquorea* of Linnæus, both excellent, as indeed may be said of all that Forskäl did. In 1776 a *Medusa æquorea* was noticed, scarcely more than by name, in the 'Zoologiæ Danicæ Prodromus' of Otho Frederic Müller. In 1780, Otho Fabricius, in his excellent 'Fauna Groenlandica,' gives a shorter account than usual with him of a Medusa, which he refers to the *æquorea* of Linnæus. He speaks of it as a very simple animal, smaller and softer than *Medusa aurita*, convex above, concave beneath, with very much inflected margins and white marginal cilia. The two last-mentioned characters are opposed to the notion of *Medusa æquorea*, as represented and described by Forskäl, and the first of them to the slight idea of its shape that we gather from Loefling. In 1791 Adolph Modeer commenced the work of hair-splitting by separating the animal of Forskäl, under the name of *Medusa patina*, from that of Loefling, for which he reserved the name *Medusa æquorea*. In 1809 Peron and Lesueur published in the 'Annales du Muséum d'Histoire Naturelle,' vol. xiv., their important classification and synopsis of all known Medusæ. In that paper, excellent though it be, they increase the confusion, by giving the name of *Æquorea atlantica* to Loefling's animal, *Æq. danica* to Müller's, *Æq. grœnlandica* to that of Fabricius, *Æq. Forskalea* to that of Forskäl, and *Æq. stauroglypha* to a new species of their own, probably identical with all the others. In 1829 Eschscholtz, in his 'System der Acalephen,' attempted to rectify this confusion, by rejecting all these names excepting *Æq. Forskalina*, that alone having been sufficiently described. In 1843 Lesson published his History of Acalephæ in the 'Nouvelles Suites à Buffon,' and, to make confusion worse confounded, rejected all rectifications and restored all the names and imperfectly noticed individuals to full specific rank.

After attentively considering the notices more or less perfect that the various older observers have given, of what they call *Medusa æquorea*, I am led to the belief that in most instances one species, not several, was met with, and that the creature I now describe and figure as British is identical with the *Medusa æquorea* of Loefling, Forskäl and Müller. Since Forskäl alone described and figured it in a comprehensible manner, the name *Æquorea Forskalea*, proposed by Peron, is peculiarly appropriate, the more so since that of *Medusa patina* of Modeer was proposed under a mistake. Forskäl expressly states that his species is common to the North Atlantic and the Mediterranean, and that it inhabits the Danish seas, where it is called "Vandmand," that is, Waterman.

It remains to be seen whether our species is related to the *Æquorea violacea* of Milne-Edwards, well described and beautifully figured in the 16th volume of the 2nd series of the 'Annales des Sciences Naturelles,' and observed by that eminent naturalist in the Mediterranean. From an examination of its anatomy he first showed the serious error committed by Eschscholtz in considering the *Æquoridæ* as cryptocarpous. I am inclined to agree with Milne-Edwards in considering his species distinct from that of Forskäl. The genital glands are not prolonged nearly so close to the margin; the lips of the stomach are not furbelowed; the bases of the tentacles are not bulbous, and originate regularly *between* the gastro-vascular canals.

There were no eyes observed by the distinguished zoologist just quoted in the species he examined. In ours the eyes are evident, and a determination of their position and appearance is of consequence, since they confirm the affinity of *Æquorea* with the Naked-eyed Medusæ, whilst at the same time, in the little appendage or rudimentary lid projecting above them, they indicate an approach to the *Steganophthalmatous* type, such as is consistent with the general high organization and aspect of the *Æquorea* when compared with other *Gymnophthalmatous* forms.

It is interesting to remark that the *Æquorea ciliata* of Eschscholtz is a North Pacific species, beautifully representing, yet quite distinct from, *Æquorea Forskalea*.

## 2. DESCRIPTIONS OF NEW SPECIES OF EULIMA, TRIPHORIS, ETC., FROM THE COLLECTION OF HUGH CUMING, ESQ.

### BY ARTHUR ADAMS, F.L.S. ETC.

1. EULIMA MODICELLA, A. Adams. *E. testâ subulato-pyramidali, albâ, subpellucidâ, flexuosâ; anfractibus* 11, *planulatis, varicibus lateralibus continuis impressis, instructis; anfractu ultimo, in medio, vix angulato; aperturâ ovali; columellâ anticè subrectâ; labro anticè producto.*

*Hab.* Island of Zebu, sandy mud, 7 fathoms. Mus. Cuming.

2. EULIMA GRANDIS, A. Adams. *E. testâ subulato-pyramidali, albâ, solidâ, flexuosâ, opacâ; anfractibus* 15, *planulatis, varicibus lateribus continuis instructis; anfractu ultimo angulato; aperturâ obliquâ, oblongo-ovali, labio anticè calloso; labro margine flexuoso, anticè subreflexo.*

*Hab.* Island of Burias, coral sand, 7 fathoms. Mus. Cuming.

3. EULIMA PORCELLANA, A. Adams. *E. testâ subulatâ, albâ, solidâ, opacâ, apice subflexuoso; anfractibus* 13–14, *planulatis, varicibus impressis irregularibus lateralibus; aperturâ oblongo-ovali, labio anticè calloso, vix reflexo; labro margine, in medio, dilatato.*

*Hab.* ——? Mus. Cuming.

4. EULIMA ACUTA, A. Adams. *E. testâ aciculato-turritâ, albidâ, rectâ, subopacâ; anfractibus duodecim, planiusculis, ultimo rotundato; aperturâ oblongâ, anticè subreflexâ, labio subincrassato; labro margine recto.*

*Hab.* Sual, province of Cangisanan, island of Luzon, sandy mud, 7 fathoms. Mus. Cuming.

5. EULIMA CUSPIDATA, A. Adams. *E. testâ subulato-pyramidali, albidâ, solidâ, rectâ; anfractibus* 12, *convexiusculis, anfractu ultimo rotundato; aperturâ oblongo-ovali, labio anticè calloso, subrecto; labro acuto.*

*Hab.* Sibonga, island of Zebu, in loose coral under stones, low water. Mus. Cuming.

6. EULIMA OBESULA, A. Adams. *E. testâ pyramidali-ovatâ, albâ, solidâ, nitidâ, opacâ; anfractibus sex, convexis, ultimo rotundato; aperturâ oblongo-ovali; labro margine incrassato, nec limbato vel reflexo.*

*Hab.* Gindulman, isle of Bohol, in soft mud, 8 fathoms. Mus. Cuming.

7. EULIMA TEINOSTOMA, A. Adams. *E. testâ subulato-turritâ, rectâ, albidâ, nitidâ, subpellucidâ; anfractibus* 12, *planulatis, lineâ impressâ infra suturas; anfractu ultimo rotundato; aperturâ oblongo-ovali, anticè producto, labio subrecto, anticè reflexo; labro margine, in medio, dilatato.*

*Hab.* Feejee Islands, on coral reefs, in sand, low water. Mus. Cuming.

8. Eulima flexuosa, A. Adams. *E. testâ subulato-turritâ, albâ, flexuosâ, solidâ, subopacâ; anfractibus* 15, *planulatis, lineâ impressâ subpellucidâ ad suturas; anfractu ultimo rotundato; aperturâ oblongâ; labro margine flexuoso, in medio producto.*
*Hab.* ——? Mus. Cuming.

9. Eulima aclis, A. Adams. *E. testâ subulato-turritâ, albidâ, solidâ, subopacâ; anfractibus* 11, *planulatis, ultimo rotundato, anticè subproducto; aperturâ oblongâ, labio anticè subreflexo.*
*Hab.* Singapore, coarse gravel and sand, 12 fathoms. Mus. Cuming.

10. Eulima pyramidalis, A. Adams. *E. testâ subulato-pyramidali, albâ, nitidâ, subpellucidâ; anfractibus decem, planulatis, lineâ impressâ prope suturas, anfractu ultimo subangulato; aperturâ oblongo-ovali; labro margine, in medio, subproducto.*
*Hab.* Isle of Capul, on the reefs in sand, low water. Mus. Cuming.

11. Eulima polygyra, A. Adams. *E. testâ subulato-pyramidali, albâ, subopacâ, apice tortuoso; anfractibus permultis, planulatis, ultimo angulato; aperturâ obliquâ, subtetragonali, labio anticè reflexo; labro, in medio, valdè dilatato.*
*Hab.* Cagayan, province of Misamis, isle of Mindanao, sandy mud, 50 fathoms. Mus. Cuming.

12. Eulima vitrea, A. Adams. *E. testâ subulatâ, acutâ, rectâ, albidâ, vitreâ, pellucidâ; anfractibus planulatis, lineâ impressâ prope suturas; anfractu ultimo rotundato; aperturâ oblongo-ovali, labio anticè recto, in medio subtortuoso; labro anticè subreflexo.*
*Hab.* Feejee Islands; from the stomach of a *Holothuria* (*Captain Swain*). Mus. Cuming.

13. Eulima Guildingii, A. Adams. *E. testâ subulatâ, rectâ, nitidissimâ, albâ, pellucidâ; anfractibus planulatis, ultimo subrotundato, elongato; aperturâ oblongo-ovali, labio vix tortuoso; labro margine flexuoso.*
*Hab.* St. Vincents, West Indies, sandy mud, deep water. (*Rev. L. Guilding.*) Mus. Cuming.

14. Eulima Cumingii, A. Adams. *E. testâ subulato-turritâ, albâ, rectâ, solidâ, opacâ; anfractibus* 13, *convexiusculis, varicibus irregularibus impressis instructis; anfractu ultimo rotundato; aperturâ oblongo-ovali, labio anticè calloso, incrassato; labro margine recto.*
*Hab.* Lord Hood's Island, South Seas, on the *Avicula margaritifera*. Mus. Cuming.

15. Triphoris variegatus, A. Adams. *T. testâ subulato-pyramidali, in medio tumidâ, albâ, maculis triangularibus rufo-fuscis variegatâ; anfractibus planulatis, triseriatim granulatis, granis æqualibus, interstitiis punctatis, suturis impressis; canali brevi, apertâ.*

*Hab.* St. John's. Mus. Cuming.

A large variegated species, somewhat resembling in general appearance *T. ornatus*, Desh.

16. Triphoris pulchellus, A. Adams. *T. testâ subulato-pyramidali, in medio tumidâ, fuscâ, serie moniliformi albo ornatâ; anfractibus convexiusculis, triseriatim granuloso-carinatis, granorum serie inferiore prominulâ, superiore multo minore; aperturâ rotundatâ, constrictâ; canali brevi, recurvo.*

*Hab.* ——? Mus. Cuming.

A handsome brown species, with a white series of bead-like granules at the lower part of each whorl.

17. Triphoris nigro-fuscus, A. Adams. *T. testâ pyramidali, nigro-fuscâ; anfractibus planis, triseriatim granulatis, granulis æqualibus, confertis, anfractuum suturis impressis, basi convexâ.*

*Hab.* Sydney, low water, under stones (*Mr. Strange*).

A black-brown species, with three rows of regular, equal-sized granules on each whorl. Mus. Cuming.

18. Triphoris festivus, A. Adams. *T. testâ pyramidali, basi planâ fuscâ, albidâ, fasciis fuscis interruptis, transversis, ornatâ; anfractibus planis, cingulis duabus granorum instructis; interstitiis valde punctatis.*

*Hab.* Port Lincoln. Mus. Cuming.

A small prettily-marked species, with two rows of granules on each whorl, and the interstices deeply punctured.

19. Triphoris scitulus, A. Adams. *T. testâ subulato-pyramidali, albidâ, nitidâ, subpellucidâ, suturis rufo-tinctis; anfractibus convexiusculis, cingulis tribus nodorum ornatis, cingulâ medianâ majore moniliformi, nodorum interstitiis fuscis, anfractu ultimo basi fusco; canali brevi, aperto.*

*Hab.* Port Lincoln. Mus. Cuming.

A semipellucid, white and brown species, with the middle row of nodules very prominent.

20. Triphoris albidus, A. Adams. *T. testâ subulato-pyramidali, albidâ, nitidâ; anfractibus planulatis, subimbricatis, granoso-clathratis, granis oblongis, serie granorum inferiore prominulâ, anfractu ultimo basi fulvo; canali brevi, subrecurvo.*

*Hab.* Honduras (*Dyson*). Mus. Cuming.

A solid, white, shining, pyramidal species, with oblong granules disposed in three series on each whorl.

21. Triphoris vestalis, A. Adams. *T. testâ turrito-subulatâ, dextrorsâ, albâ, subnitidâ; anfractibus* 13, *convexis, suturis impressis, triseriatim granulatis, interstitiis alveolatis.*

*Hab.* Honduras. Mus. Cuming.

A delicate and chaste right-handed species, with convex whorls, and pits between the granules.

22. **Triphoris cingulatus**, A. Adams. *T. testâ elongato-pyramidali, cinereâ; anfractibus sexdecim ad octodecim, spiraliter tricingulatis, cingulâ medianâ minore, interstitiis carinarum longitudinaliter valde striatis.*

*Hab.* Red Sea (*Rüppell*). Mus. Cuming.

An ashy-grey species, with three smooth keels on each whorl, and the interstices strongly striated: somewhat similar to the *T. corrugatus* of Hinds.

23. **Triphoris labiatus**, A. Adams. *T. testâ subulato-pyramidali, nigro-fuscâ, in medio tumidâ, spirâ apice obtuso; anfractibus* 10, *planulatis, triseriatim granuloso-carinatis, suturis concavo-impressis; labro reflexo, dilatato, albido; canali brevi, subrecurvo.*

*Hab.* Sydney, under stones, low water (*Mr. Strange*). Mus. Cuming.

A small, nearly black shell, with the outer lip dirty white or pale fuscous.

24. **Mesalia striata**, A. Adams. *M. testâ subulato-turritâ, fulvâ; anfractibus* 10–12, *planulatis, superioribus longitudinaliter plicatis, inferioribus lævibus, transversim striatis, striis impressis, subdistantibus; anfractu ultimo subangulato; aperturâ ovali, labio subplanulato, anticè subreflexo; labro acuto, integro.*

*Hab.* Philippines. Mus. Cuming.

25. **Mesalia decussata**, A. Adams. *M. testâ subulato-turritâ, in medio subcylindraceâ, pallidè rubro-fuscâ; anfractibus novem, convexiusculis, plicis longitudinalibus confertis, et sulcis impressis, transversis, decussatim ornatis; aperturâ semiovali, labio subcalloso, anticè subreflexo, integro; labro incrassato, margine integro.*

*Hab.* Masbate, Philippines. Mus. Cuming.

26. **Rissoina semiglabrata**, A. Adams. *R. testâ subulato-pyramidali, albâ, solidâ, nitidâ; anfractibus convexiusculis, supremis transversim striatis, inferioribus glabratis; aperturâ semiovali, anticè subcanaliculatâ, labio incrassato; labro dilatato, crasso, intus tuberculis parvis instructo, margine subreflexo.*

*Hab.* Deleguete, isle of Zebu, found under stones, low water. Mus. Cuming.

A species having very much the aspect of a *Eulima*. In this species there are two tubercles on the inner surface of the outer lip.

27. **Rissoina Eulimoides**, A. Adams. *R. testâ subulato-pyramidali, albâ, solidâ, nitidâ; anfractibus planiusculis, suturis impressis; aperturâ semiovali, anticè subcanaliculatâ, labio lævigato, subincrassato; labro margine crasso, in medio dilatato, intus tuberculo minuto instructo.*

*Hab.* Island of Capul, on coral reefs in sand, at low water. Mus. Cuming.

A small polished Eulima-like species, with a single small tubercle on the inner surface of the outer lip.

December 9, 1851.

W. Yarrell, Esq., in the Chair.

The following papers were read:—

## 1. On some Bones of Didus. By A. D. Bartlett.

(Aves, Pl. XLV.)

The history of the Dodo having been recently the subject of so much inquiry, and the exertions made by Mr. Strickland, Dr. Melville and others, having succeeded in bringing together so many important facts, it might appear that there was little more to be said upon the subject; this, however, I believe is far from being the case. A few facts established upon a subject which was before obscured in doubt and error will, I trust, always act as a charm, and induce us at every opportunity to investigate that subject still further, in the hope of learning the truth. On the present occasion I am desirous of calling attention to a few bones upon the table. In so doing I beg to say, that in the year 1830 a collection of bones arrived in Paris, which attracted the attention of the scientific world. These bones came from the island of Rodriguez, but on account of their being incrusted with stalagmite, little has been done with them; they were, however, the cause of search being made for more in the same locality, and two collections were made in the year 1831 by the late Mr. Telfair. One of these collections was forwarded to the Andersonian Museum in Glasgow, the other to the collection of this Society, and at the evening meeting, March 12, 1833, the bones sent by Mr. Telfair were laid upon the table.

I will here read an extract from the Society's Proceedings:—"Dr. Grant pointed out that they were the bones of the hinder extremity of a large bird, and the head of a humerus. With reference to the metatarsal bone, which was long and strong, Dr. Grant pointed out that it possessed the articulating surfaces for four toes, three directed forwards and one backwards, as in the foot of the Dodo preserved in the British Museum, to which it was also proportioned in magnitude and form."

I beg now to read a paragraph from Mr. Strickland's book. At page 52 we find: "The bones sent by Mr. Telfair in 1833 to the Zoological Society have met with some unfortunate fate. Three or four years ago, Mr. Fraser, the late Curator of that Society, made, at my request, a diligent search for these specimens, but all his endeavours to find them were fruitless: he found the identical box sent by Mr. Telfair, but, alas! the bones of the Solitaire, apterous as it was, had flown away, and the only bones that remained belonged to tortoises."

In the month of July last an opportunity was afforded me by the Secretary of renewing this search, and I had the good fortune to find what I believe to be all the specimens sent to the Society by Mr. Telfair.

Upon my informing Mr. Mitchell of my success, that gentleman, knowing the trouble and interest I had taken to recover them, granted me permission to examine, compare, and describe them, and to bring the subject before the Society.

In the first place, we are led to believe (and I think without the slightest doubt) that these bones came originally from the island of Rodriguez. There cannot be any doubt, also, that Rodriguez and the neighbouring islands were at one period inhabited by several species of large birds. Whether any of the same species of these birds inhabited different islands, or whether each island was inhabited by distinct species, is a question to which I beg most particularly to call your attention: the most recent publication by Mr. Strickland and Dr. Melville would lead us to believe that the true Dodo (*Didus ineptus*) was solely confined to the island of Mauritius, and another species, known as the Solitaire, was said to be its representative on the island of Rodriguez. If this be true, I should have the pleasure of introducing to your notice the bones of at least two new species of birds from that island: I do not however myself feel justified in so doing, but believe some of the bones sent here by Mr. Telfair belong to the true Dodo (*Didus ineptus*). There are also in the collection (I think without doubt) bones of two other species, one of these of much larger size than the Dodo, the other considerably smaller. The bones in question having all the usual and well-known characteristics of those of adult birds, we cannot therefore suppose the differences which they present to be such as might arise from age; and on the other hand, you will perceive that the proportions are too dissimilar to allow of our regarding them as having belonged to different sexes of the same species. There often exists great difference of size in the bones of the opposite sex, but I have never noticed any very evident difference of proportion. These are to me satisfactory reasons for considering them specifically distinct. But to return to the question,—Was the Dodo found on the island of Rodriguez? Sir Thomas Herbert says *it was*; and his evidence appears to me of much importance, considering the number of years he spent travelling about, visiting these islands, and collecting rare and curious things; having also repeatedly described the Dodo, and very probably brought one to England. I am therefore inclined to regard the assertions made by Sir Thomas Herbert with more respect than they have elsewhere received. It may appear at first sight impossible that the same species of birds which were destitute of the power of *swimming* or *flying* could inhabit islands so far from each other; but, were these islands always in the state in which we find them? may they not at some distant period have been united and formed part of the same land? In endeavouring in this manner to account for the existence of the Dodo upon the island of Rodriguez as well as at Mauritius, it has been remarked that this argument would not hold good, as the islands in question were of volcanic origin: if this be the case, to account for its existence at either place appears to me equally difficult. I am fully aware it has been the practice of late to consider the animals obtained from localities remote from each other specifically distinct; they may be so; but unless we have some certain means of distinguishing them, I do not think we ought to regard them as such.

I now venture to introduce to your notice what I believe to be the *tibia* of the Dodo (*Didus ineptus*): its agreement with the foot in the British Museum struck me as being exceedingly remarkable and conclusive: its size and proportions, as compared with the metatarsal in question, are exactly what I should have expected upon the supposition of their belonging to the same species: they fit each other so perfectly, that one might think they belonged to the same individual. With this evidence before me, I cannot for one moment hesitate in considering the *Dodo of the Mauritius to be identical with the Dodo of Rodriguez.* There are also in this collection two other bones, which, from their size and form, I believe to belong to this species: the most remarkable is the head of the *humerus*, which would indicate by its magnitude and broad attachments that it belonged to a bird of large bulk, while the sudden reduction in the size of its shaft clearly indicates a bird with small wings. The great thickness and consequent weight is sufficient to cause us to suppose that this bird had not the power of flight.

The next bone to which I will call your attention is a right metatarsal, which appears to me to have belonged to a bird known to Leguat as the Solitaire, and described by him during his residence on the island of Rodriguez. I beg to read Leguat's description, in order to point out to you its near agreement in point of size and form with the Turkey, with which bird Leguat compared the bird he called the Solitaire:—

"Of all the birds in the island, the most remarkable is that which goes by the name of the *Solitary*, because it is very seldom seen in company, though there are abundance of them. The feathers of the male are of a brown-grey colour: the feet and beak are like a Turkey's, but a little more crooked. They have scarce any tail, but their hind part covered with feathers is roundish, like the crupper of a Horse; they are taller than Turkeys. Their neck is straight, and a little longer in proportion than a Turkey's when it lifts up its head. Its eye is black and lively, and its head without comb or cop. They never fly, their wings are too little to support the weight of their bodies; they serve only to beat themselves, and flutter when they call one another. They will whirl about for twenty or thirty times together on the same side, during the space of four or five minutes. The motion of their wings makes then a noise very like that of a rattle, and one may hear it two hundred paces off. The bone of their wing grows greater towards the extremity, and forms a little round mass under the feathers, as big as a musket-ball. That and its beak are the chief defence of this bird. 'Tis very hard to catch it in the woods, but easie in open places, because we run faster than they, and sometimes we approach them without much trouble. From March to September they are extremely fat, and taste admirably well, especially while they are young; some of the males weigh forty-five pounds.

"The females are wonderfully beautiful, some fair, some brown; I call them fair, because they are of the colour of fair hair. They have a sort of peak, like a widow's, upon their breasts (*lege* beaks), which is of a dun colour. No one feather is straggling from the other all over their bodies, they being very careful to adjust themselves, and make them all even with their beaks. The feathers on their thighs are round like shells at the end, and being there very thick have an agreeable effect. They have two risings on their *craws*, and the feathers are whiter there than the rest, which livelily represents the fine neck of a beautiful woman. They walk with so much stateliness and good grace, that one cannot help admiring and loving them; by which means their fine mien often saves their lives."—*Leguat's Voyage to the East Indies*, 1708, p. 71.

You will perceive this bird was said to be larger and taller than a Turkey. A comparison of this metatarsal bone with the metatarsal bone of the Turkey I think will satisfactorily show the accuracy of Leguat's description, and at the same time justify our conclusion that this metatarsal bone belonged to the Solitaire of Rodriguez, to which the name of *Didus solitarius* has been applied. I trust I shall be pardoned for avoiding the use of the new generic term adopted by the authors of 'The Dodo and its kindred,' for in a group so little known, and at present so limited in species, it seems to me so much to increase the trouble and difficulty of those who endeavour to study such subjects, that I cannot help expressing my belief that many of the new names so often introduced serve only to impede and embarrass us, and I therefore regard them as much worse than useless.

I have now remaining the bone of a bird which when alive was much *larger*, *heavier*, and more *powerful* than the *Dodo*. For further examples of this bird's bones, I must refer to the plates in the work before alluded to, by Mr. Strickland and Dr. Melville: plate xv. fig. 2, the metatarsal bone of the large species in the Andersonian Museum, Glasgow; fig. 3, a metatarsal bone in the Parisian collection. A glance at these specimens will, I imagine, convince any one that this bird was of gigantic size, and probably double the weight of the *Dodo*. I am sure it cannot be supposed (after what has been said) that Leguat was describing this great bird when he wrote his beautiful description of the Solitaire. Another important fact will, I think, set this question at rest. Leguat states, that some of the males of the Solitaire weigh *forty-five pounds*. Now we know the weight of the largest Turkeys to be considerably less, rarely reaching *thirty pounds*, while the weight of the Dodo is stated to have been at least *fifty pounds*. It cannot, therefore, be supposed, had Leguat seen birds nearly double the size of the Dodo, he could have made the statements or comparison he has made between the Solitaire and Turkey.

I have before expressed my great dislike to an unnecessary increase of names: I feel, however, the necessity of finding an appropriate name for this large bird, and therefore propose one somewhat familiar to all who have paid any attention to the subject, and apply the name of *Didus Nazarenus* to this the largest species of the genus. In doing this, I may remark that Mr. Strickland, in his work before alluded to, has considered the *Didus Nazarenus* to be a phantom species, which he says has haunted our systems of ornithology from the days of Gmelin downwards.

The conclusions which I have arrived at from the examination of the bones to which I have just called your attention are these:—That there existed formerly three distinct species of Apterous birds in the island of Rodriguez; namely, one which is apparently identical with the *Dodo* (*Didus ineptus*) of the Mauritius; a second, which was well described under the name of *Solitaire*; and a third, which was much larger than either of the above.

12 College Street, Camden Town.

## 2. DESCRIPTION OF TWO NEW SPECIES OF MAMMALIA OF THE GENUS ANTECHINUS. BY JOHN GOULD, F.R.S. ETC.

One of these species is remarkable for being spotted on the under instead of on the upper surface, and the other for its very diminutive size: both rank among the smallest members of the genus. For the former I propose the specific appellation of *maculatus*; it may be thus described:—

### ANTECHINUS MACULATUS.

Fur short, dense, and closely applied to the skin; general tint of the upper surface dark blackish brown, minutely grizzled with yellowish brown; lower part of the flanks and under surface of the body dark brownish slate-grey, ornamented with oblong spots of greyish white arranged in irregular rows in the direction of the body; down the centre of the throat a streak of white.

| | inches. |
|---|---|
| Length from the tip of the nose to the base of the tail | $3\frac{1}{2}$ |
| ——— of the tail | $2\frac{1}{4}$ |
| ——— from the tip of the nose to the base of the ear | $\frac{1}{2}$ |
| ——— of the ear | $\frac{1}{4}$ |
| ——— of the tarsi and toes | $\frac{7}{16}$ |

*Hab.* Brushes of the river Clarence, on the east coast of Australia.

The other species I propose to name

### ANTECHINUS MINUTISSIMUS.

Fur short, dense, and closely applied to the skin; upper surface and flanks brown, slightly grizzled with black; under surface pale buff, approaching to white on the throat; tail brown above, lighter beneath; feet buffy brown, toes covered with hairs of a somewhat lighter hue.

| | inches. |
|---|---|
| Length from the tip of the nose to the base of the tail | $2\frac{3}{4}$ |
| ——— of the tail | $2\frac{1}{4}$ |
| ——— from the tip of the nose to the base of the ear | $\frac{7}{16}$ |
| ——— of the ear | $\frac{1}{4}$ |
| ——— of the tarsi and toes | $\frac{3}{8}$ |

*Hab.* Brushes of the east coasts of Australia.

### 3. DESCRIPTIONS OF A NEW SPECIES OF PTILOTIS AND A NEW SPECIES OF EÖPSALTRIA. BY JOHN GOULD, F.R.S.

Mr. Gould also exhibited two new species of birds of the genera *Ptilotis* and *Eöpsaltria*, which he characterized as follows:—

PTILOTIS FASCIOGULARIS.

All the upper surface, wings and tail olive-brown, the feathers of the head and back with darker centres, and the primaries and tail-feathers narrowly margined externally with greenish wax-yellow; lores and a streak down the side of the head from the posterior angle of the eye blackish brown; ear-coverts pale yellow; on each side of the neck a patch of yellowish white; feathers of the throat brownish black, each bordered with pale yellow, presenting a fasciated appearance; breast blackish brown; under surface striated with brown and buffy, becoming paler towards the vent; irides lead-colour; bill and feet black.

Total length, $7\frac{1}{2}$ inches; bill, $\frac{7}{8}$; wing, $3\frac{3}{4}$; tail, $3\frac{1}{2}$; tarsi, $1\frac{1}{8}$.

*Hab.* Mangrove Island, Moreton Bay.

*Female.*—Similar in colour, but of smaller size.

EÖPSALTRIA CAPITO.

Upper surface olive-green, inclining to brown on the head; wings and tail slaty brown, faintly margined with olive-green; ear-coverts grey; lores and a line descending in front of the eye and the throat greyish white; under surface yellow; irides hazel; bill black; feet brownish flesh-colour.

Total length, 5 inches; bill, $\frac{5}{8}$; wing, $3\frac{1}{8}$; tail, $2\frac{1}{4}$; tarsi, $\frac{7}{8}$.

*Hab.* Brushes of the River Brisbane, New South Wales.

*Remarks.*—Shorter and less elegantly formed than *E. Australis*, with a stout broad bill and a proportionately large and heavy head.

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## ERRATA.

Page 125, Art. 3, *for* Vanganella *read* Resania.
" " *for* Vanganella Taylorii *read* Resania Taylorii.
Page 183, line 38, *for* Chlorostoma turbinatum *read* C. fuscum.

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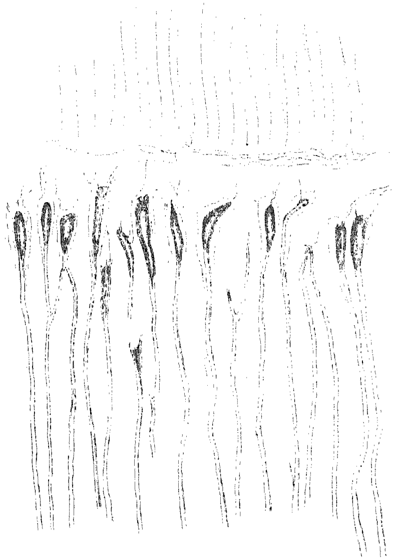

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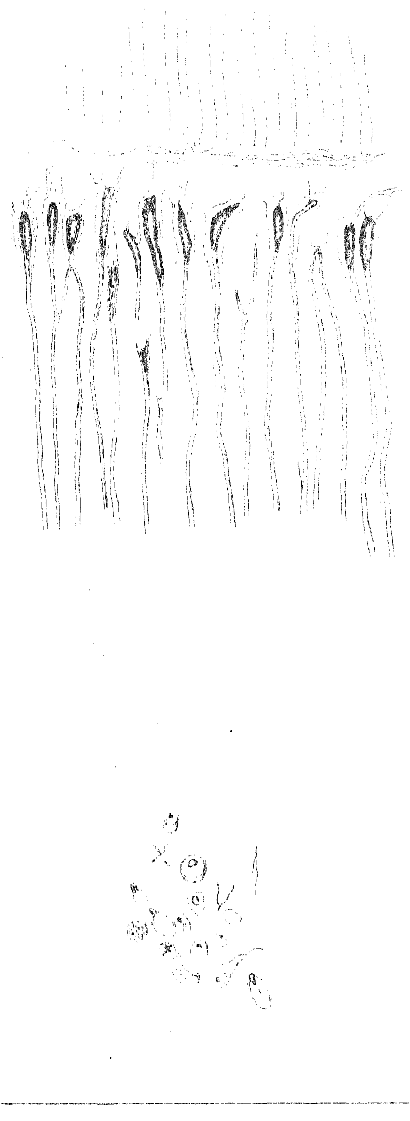

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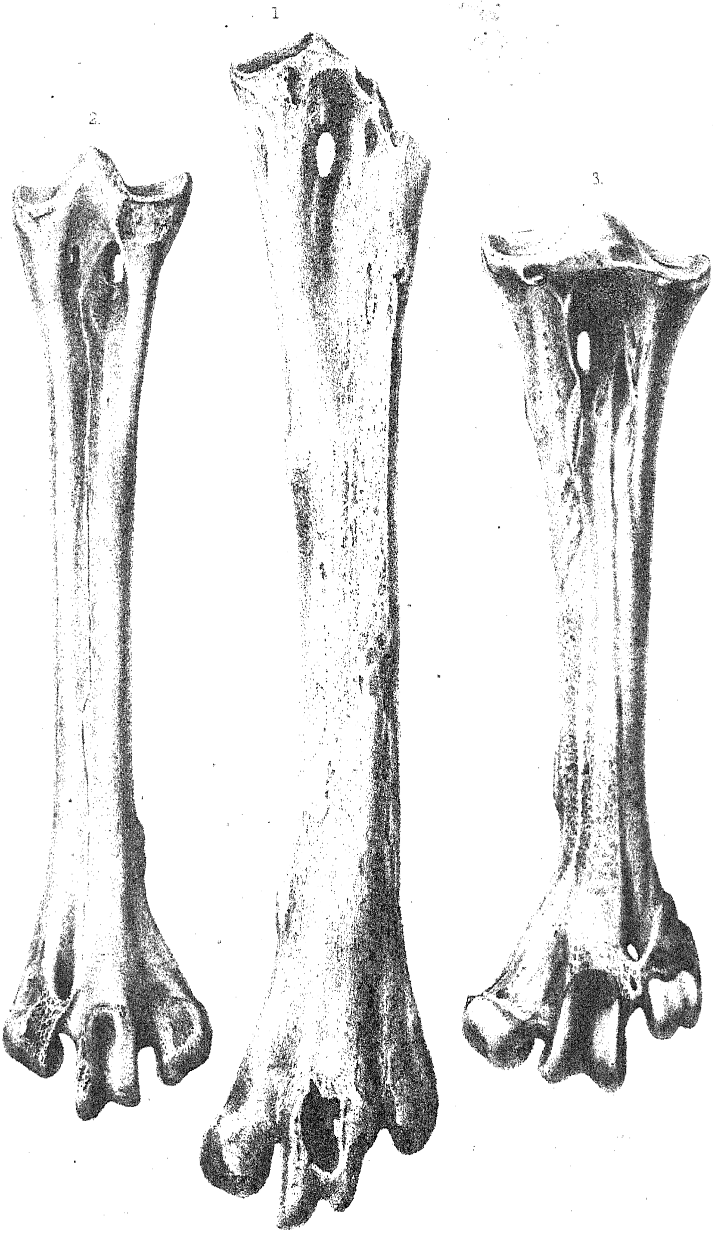
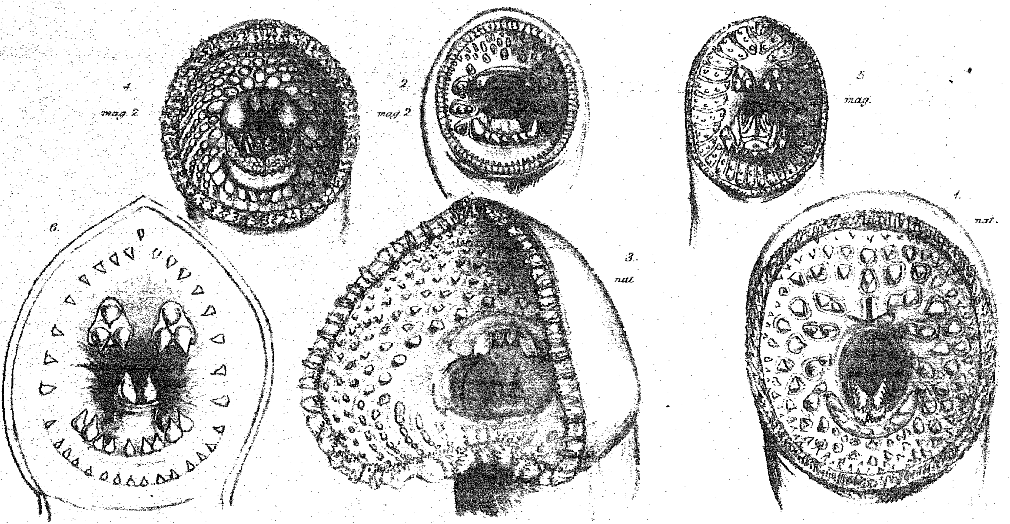


Metatarsal bone of Didus Nazarenus. 2 of Didus solitarius. 3 of Didus ineptus.

Proc. Z.S. Pisces. IV.



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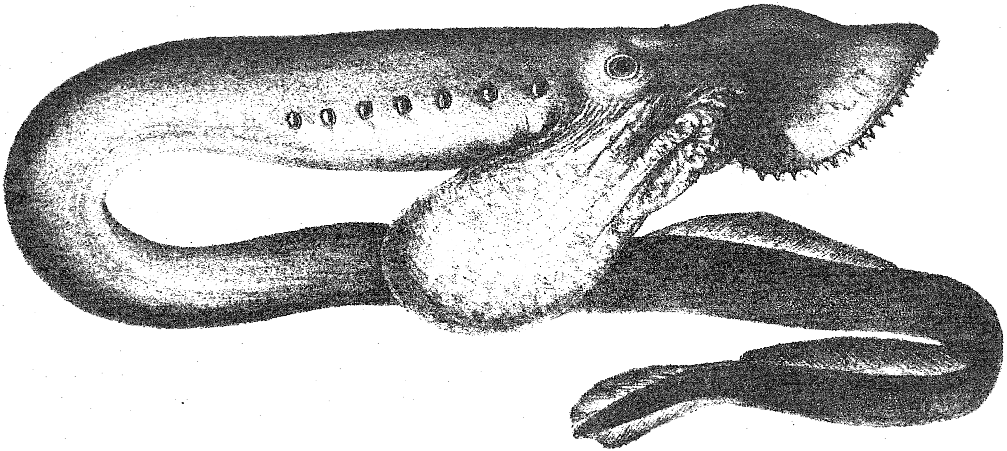

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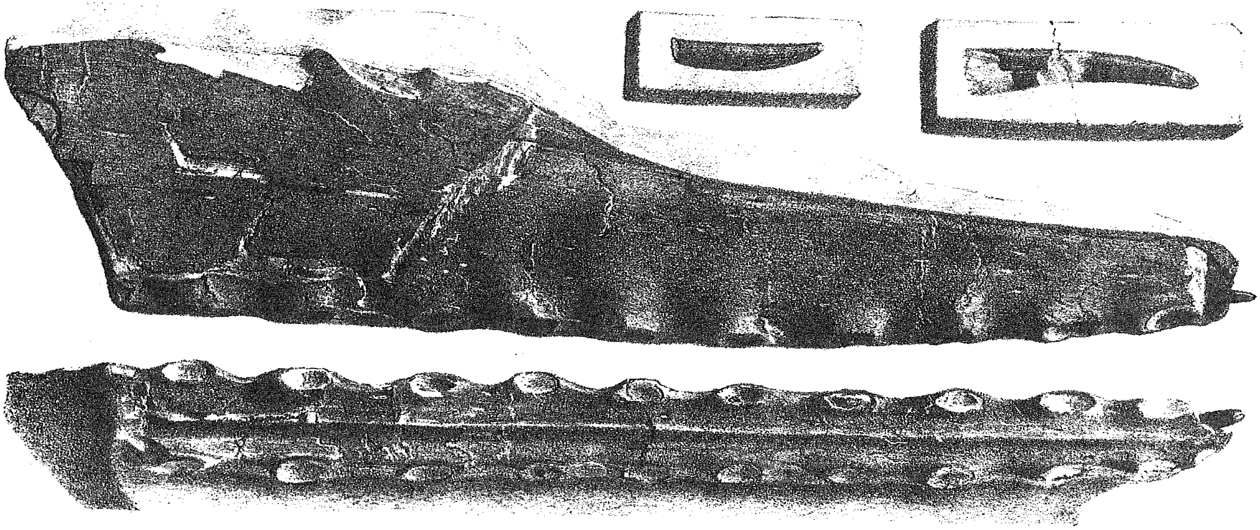

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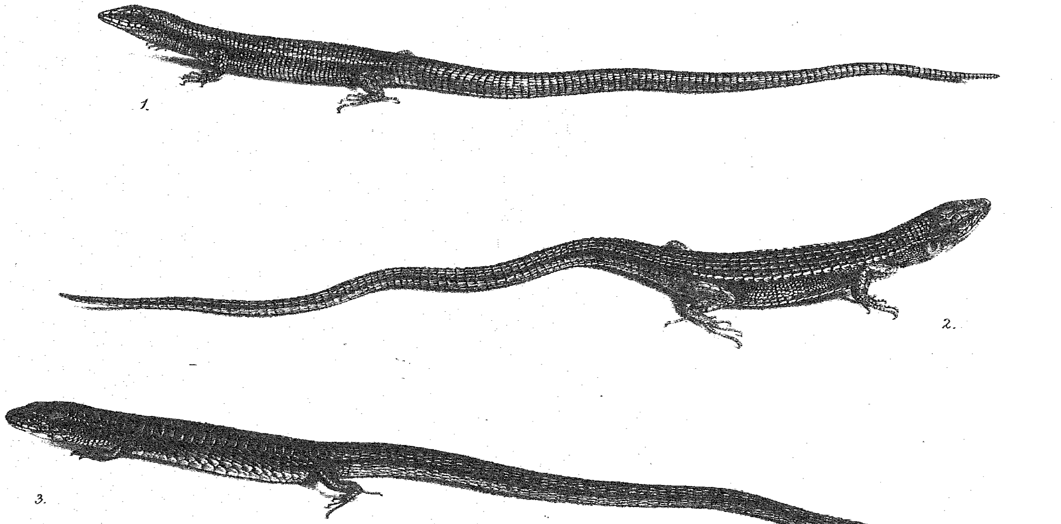

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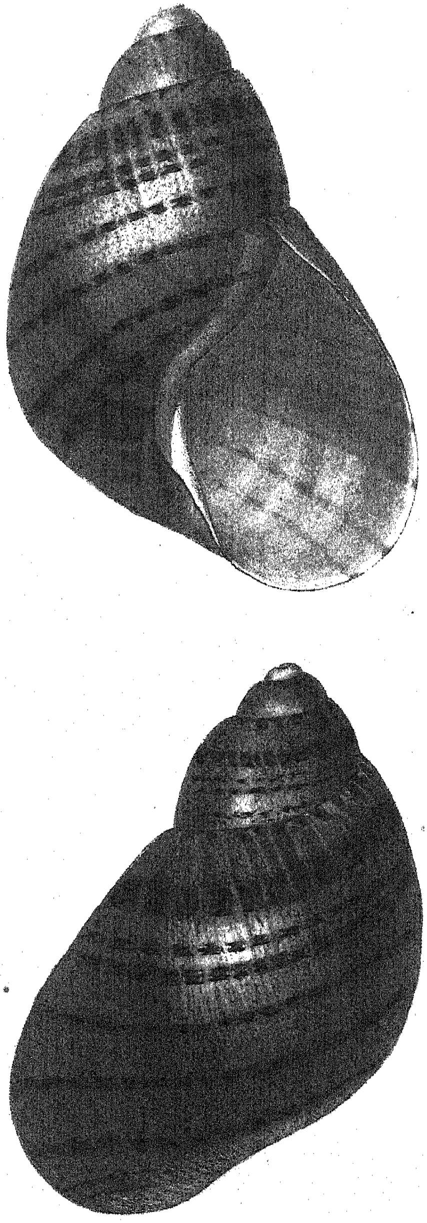

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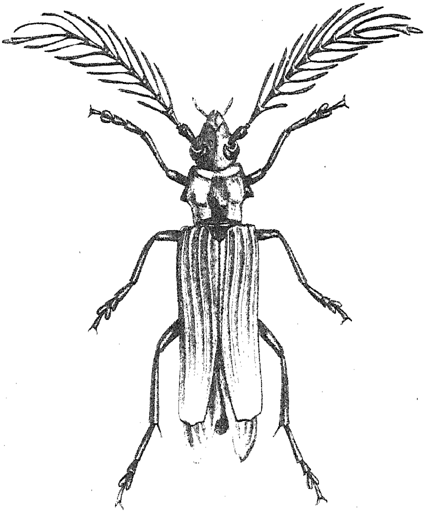

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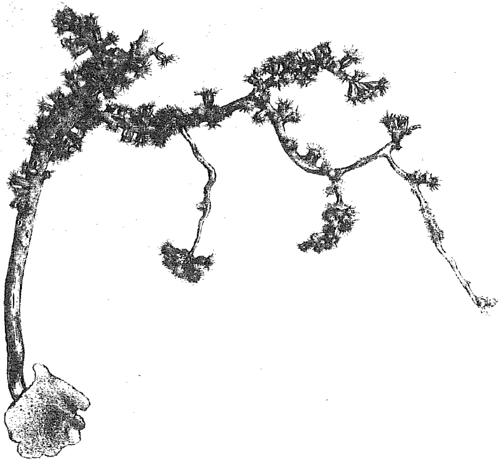

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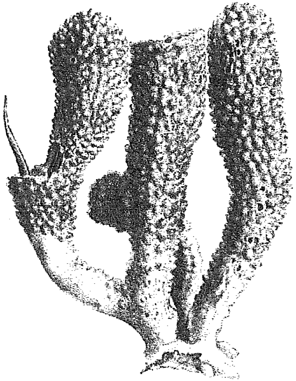

1 Comigoria clavata. Gray. 2. Nidalia occidentalis. Gray.

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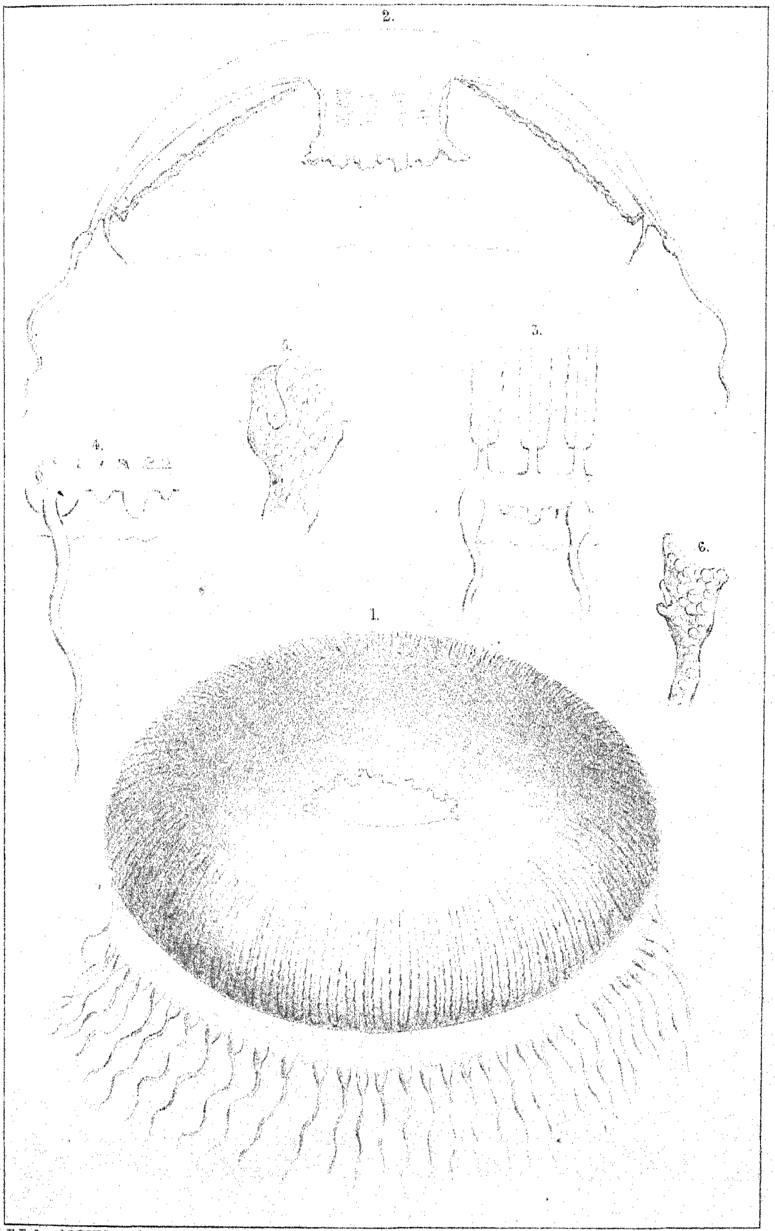

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